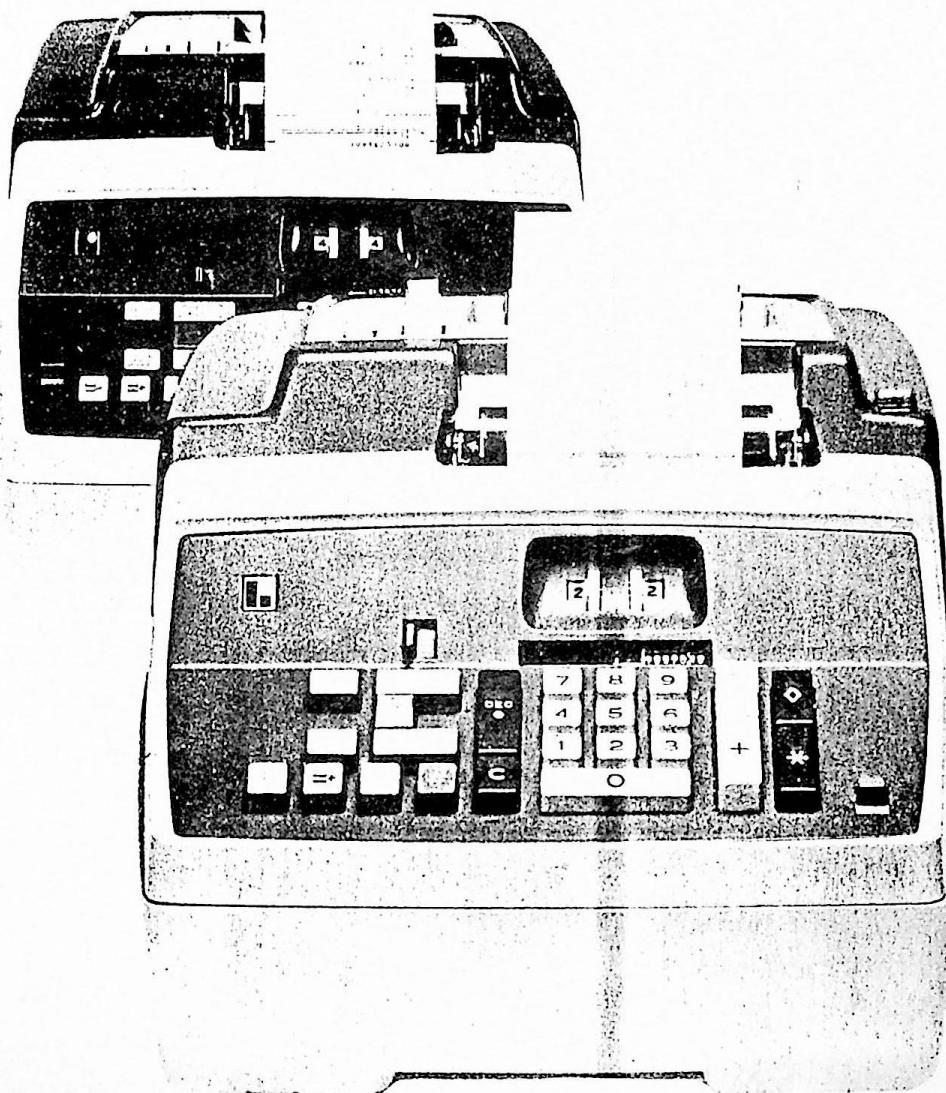


CALCULATOR SERVICE BULLETIN #P2-501

MODELS 211PC192 & 211PC193

## PARTS CATALOG



**MONROE** 

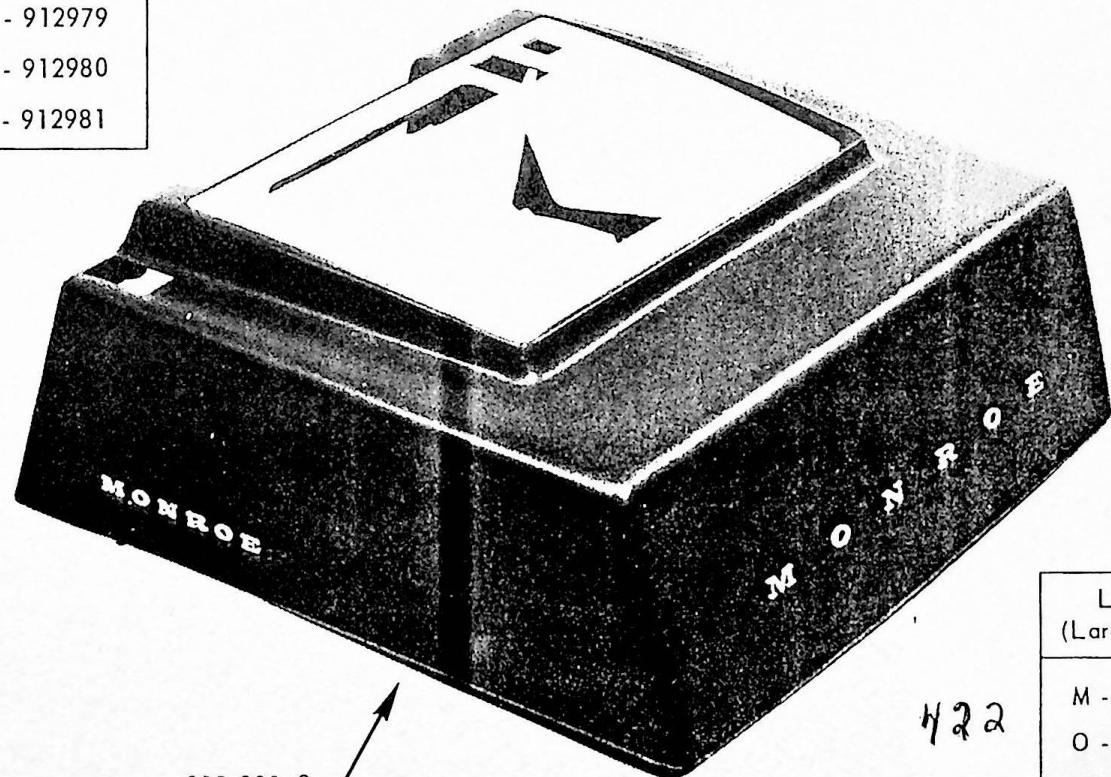
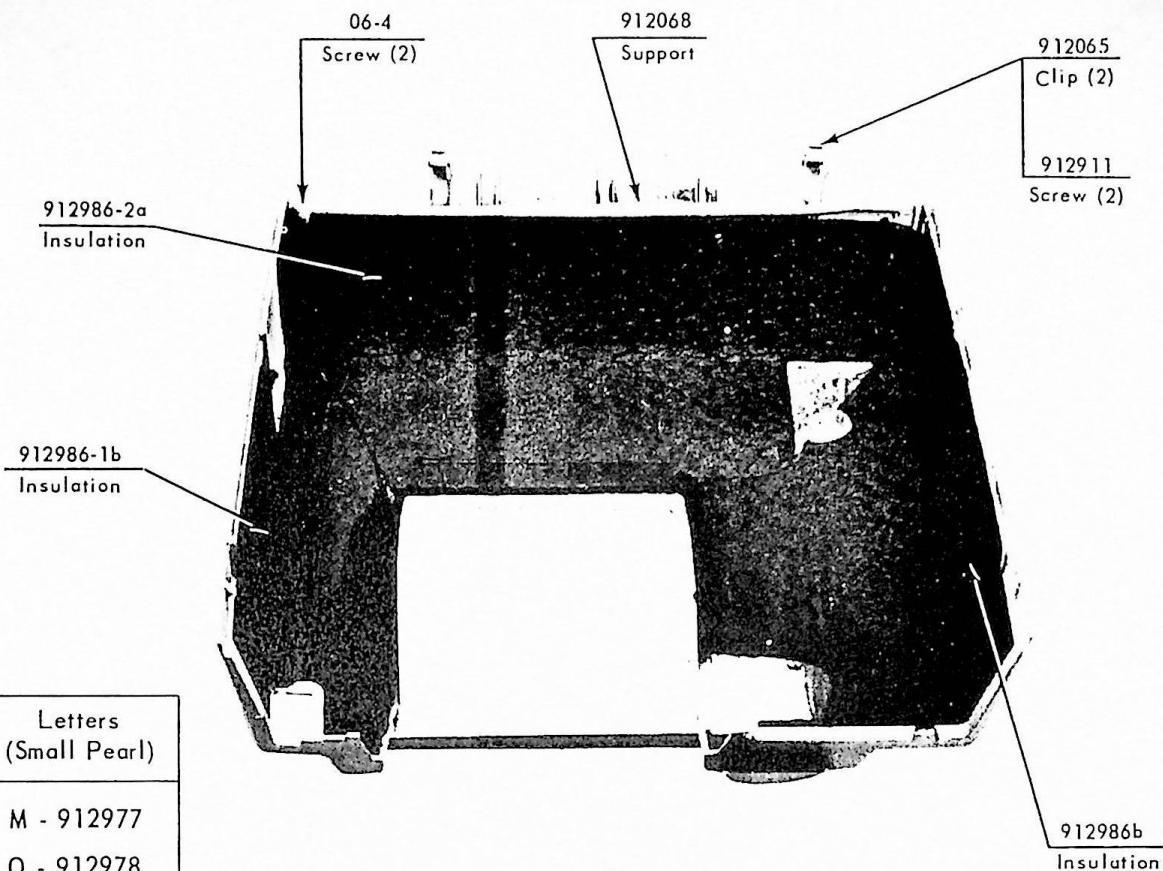
**MONROE INTERNATIONAL, INC.**

TECHNICAL PUBLICATIONS DEPARTMENT, ORANGE, NEW JERSEY

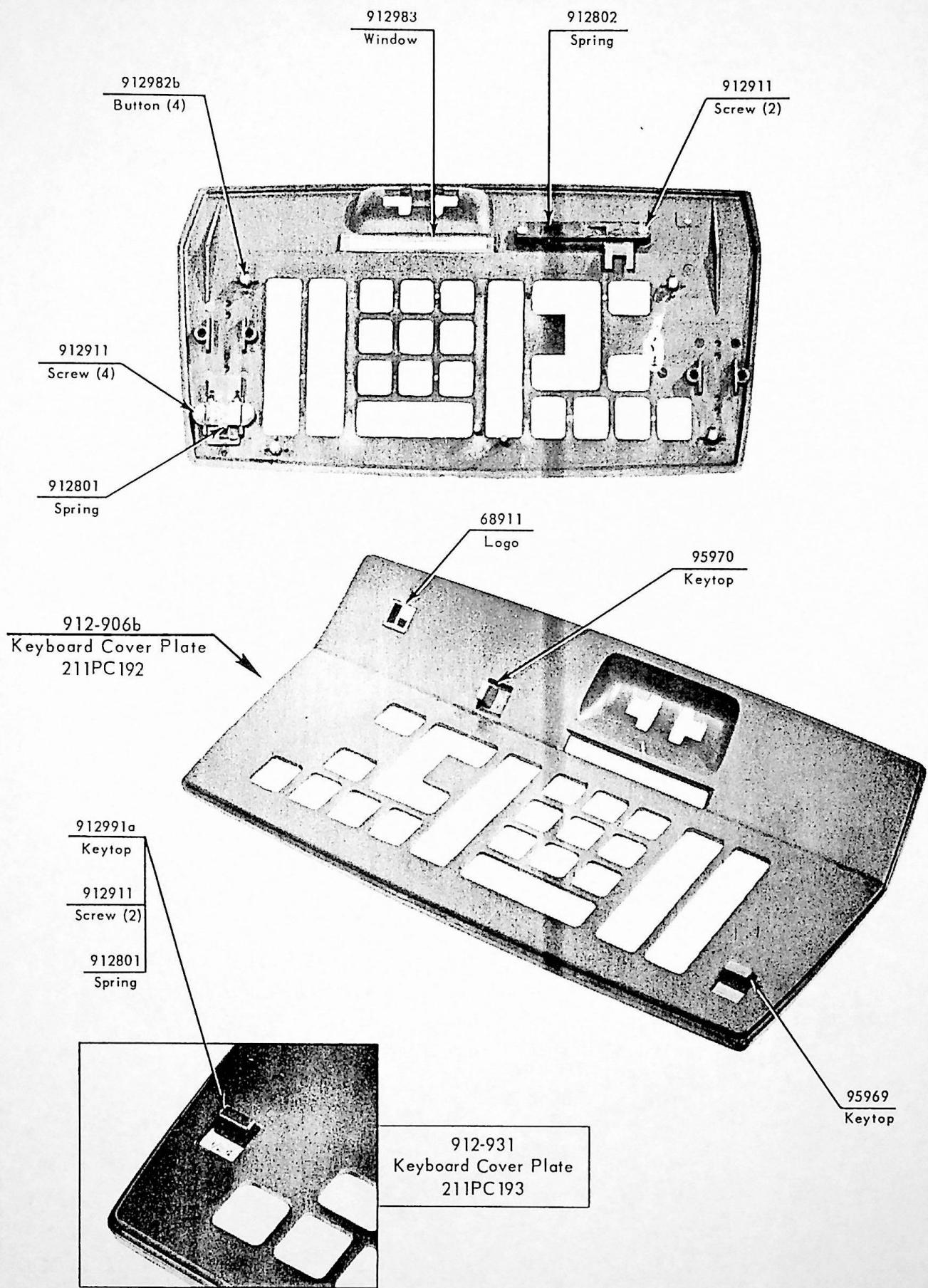
— TABLE OF CONTENTS —

MECHANISM SECTION

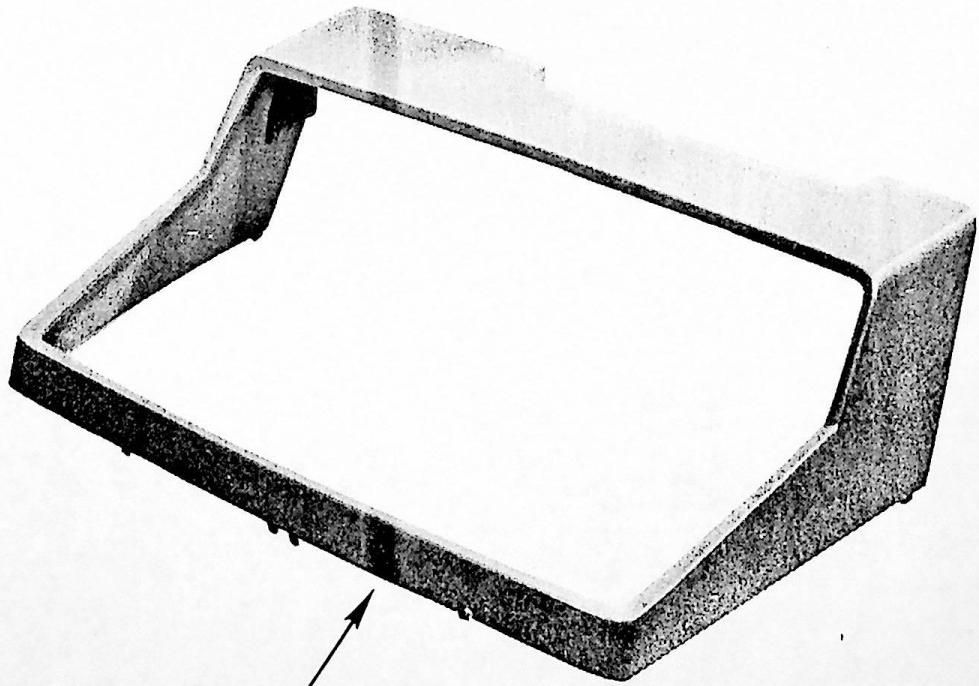
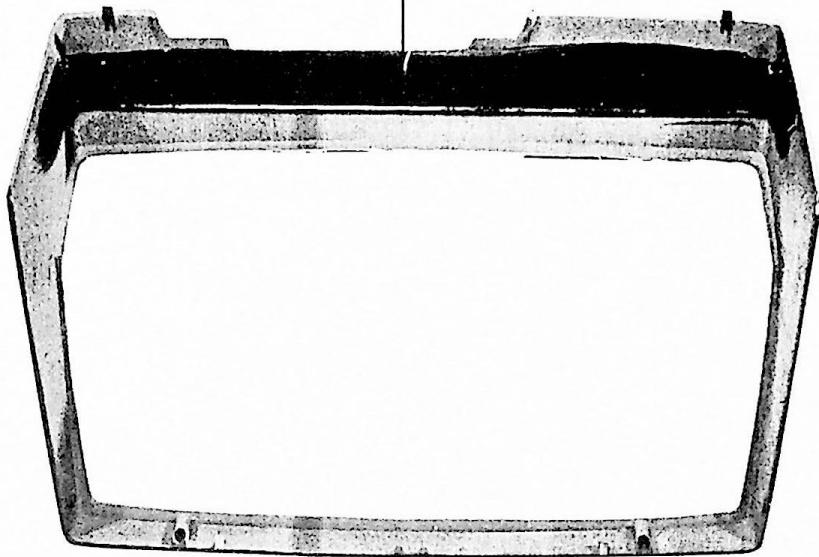
Cover Case and Packing .....	A
Left Side and Motor .....	B
Keyboards .....	C
Base and Program Unit .....	D
Set-Up Carriage and Decimal Unit .....	E
Print Unit and Front Racks .....	F
Platen Unit .....	G
Rear Racks and Accumulator .....	H
Register, Carry and Selector Units .....	J
Multiplier/Quotient Unit .....	K
High Speed Control Unit .....	L
Cross Members and Right Side .....	M
Parts List .....	N
Catalog Supplements .....	P



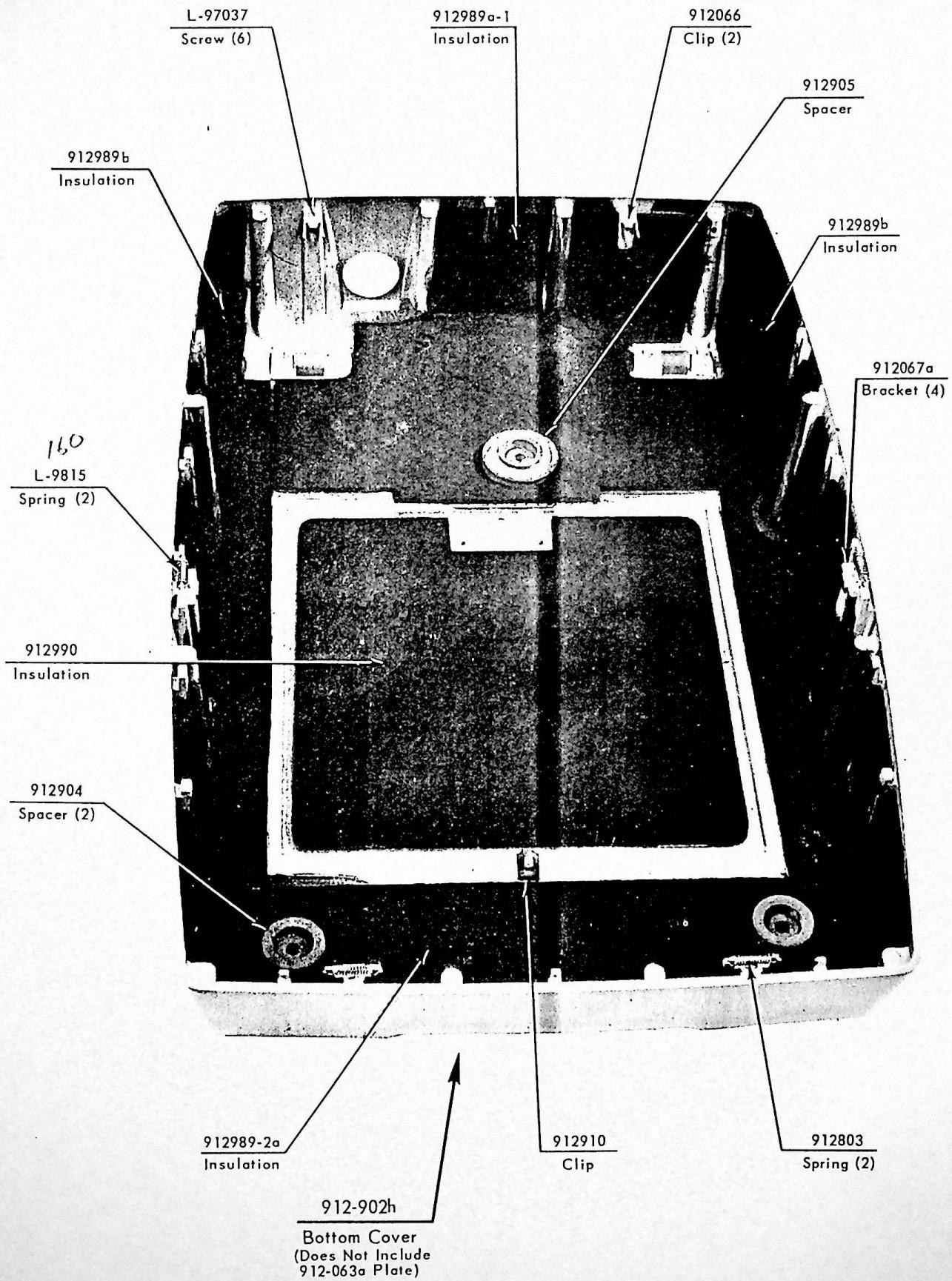
Letters (Large Coral) <i>or Pearl</i>
M - 912957
O - 912958
N - 912959
R - 912960
E - 912961

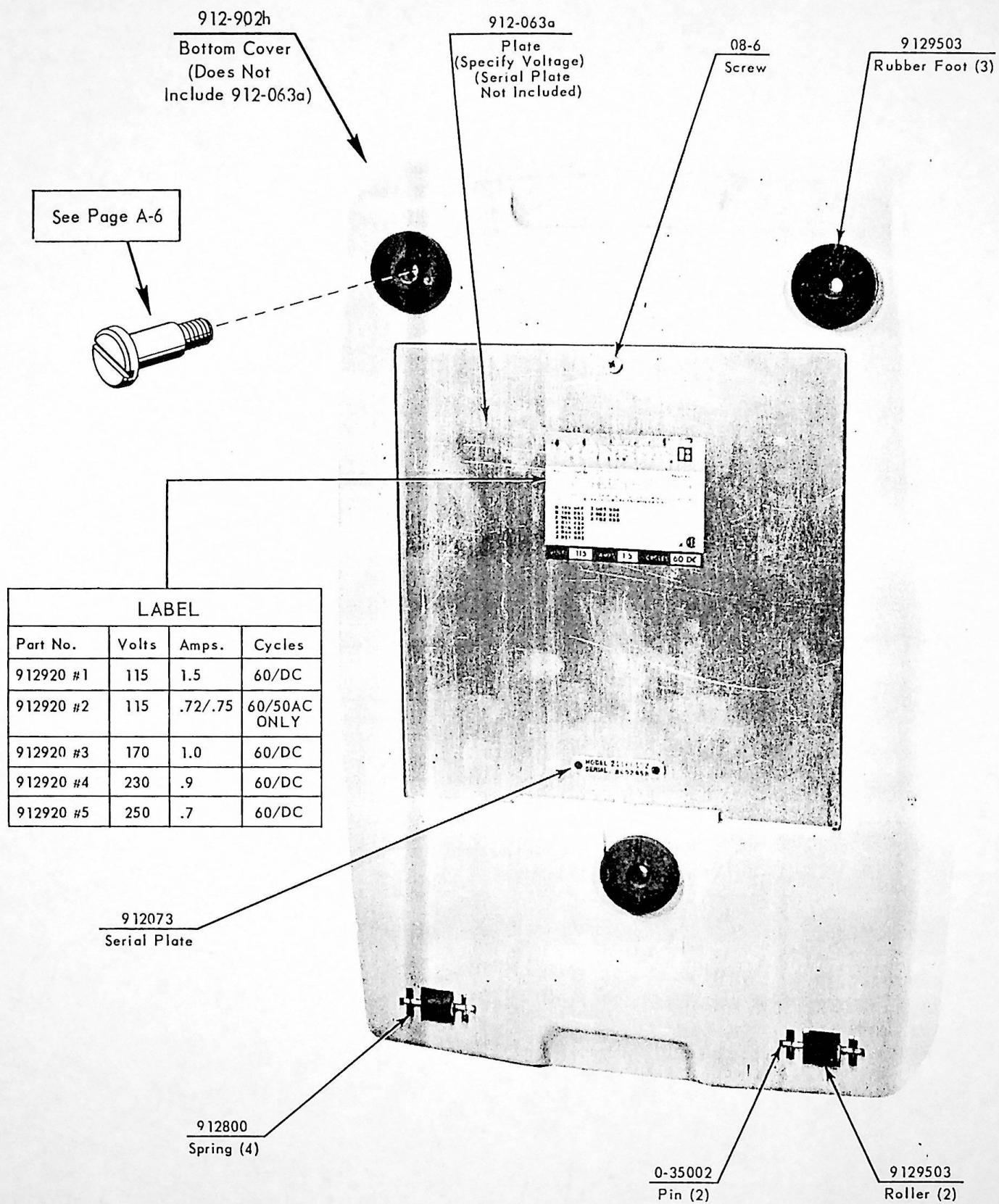


912987a  
Insulation



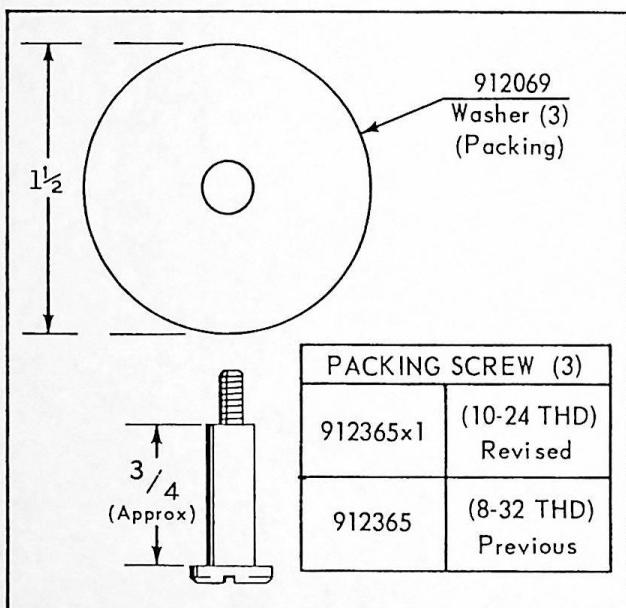
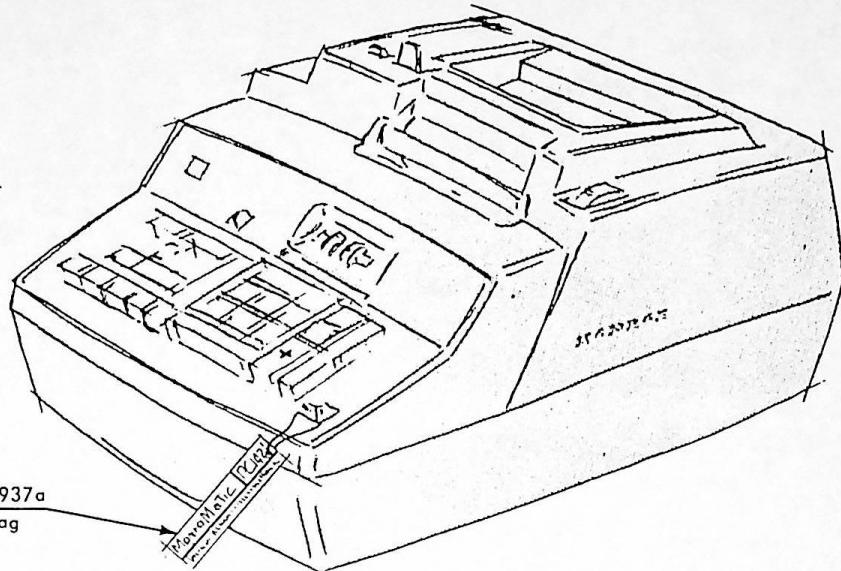
912-907a  
Keyboard Cowl





**PACKING PROCEDURE**

1. With the machine neutralized and motor cord removed, depress plus key.
2. Replace the regular foot screws and washers with the larger packing screws and packing washers.



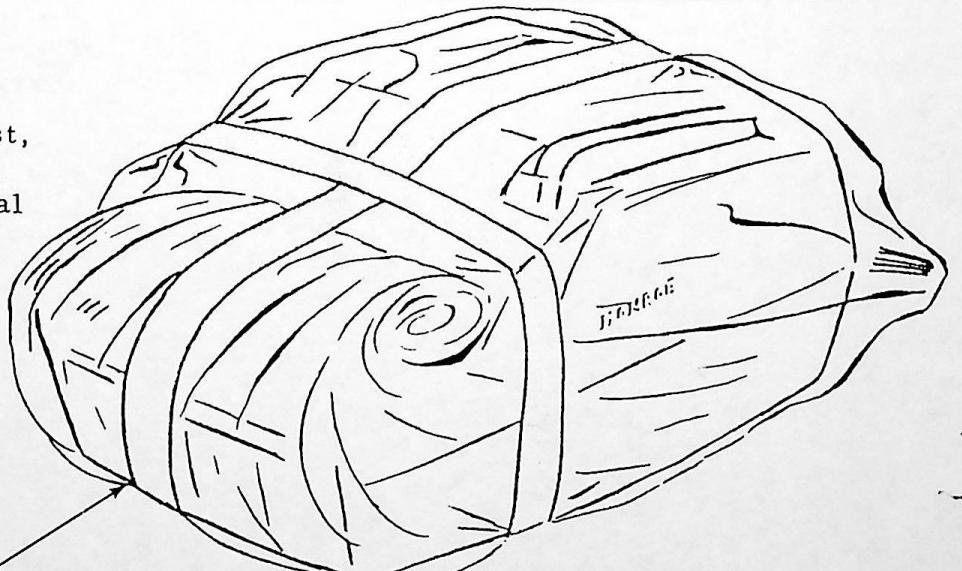
FOOT SCREW (3)	
Washers not used with Revised Screw	60 Washer (3)
$33/64$ (Approx)	$1/2$
912360x1 (10-24 THD)	912360 (8-32 THD)
Revised	Previous Style

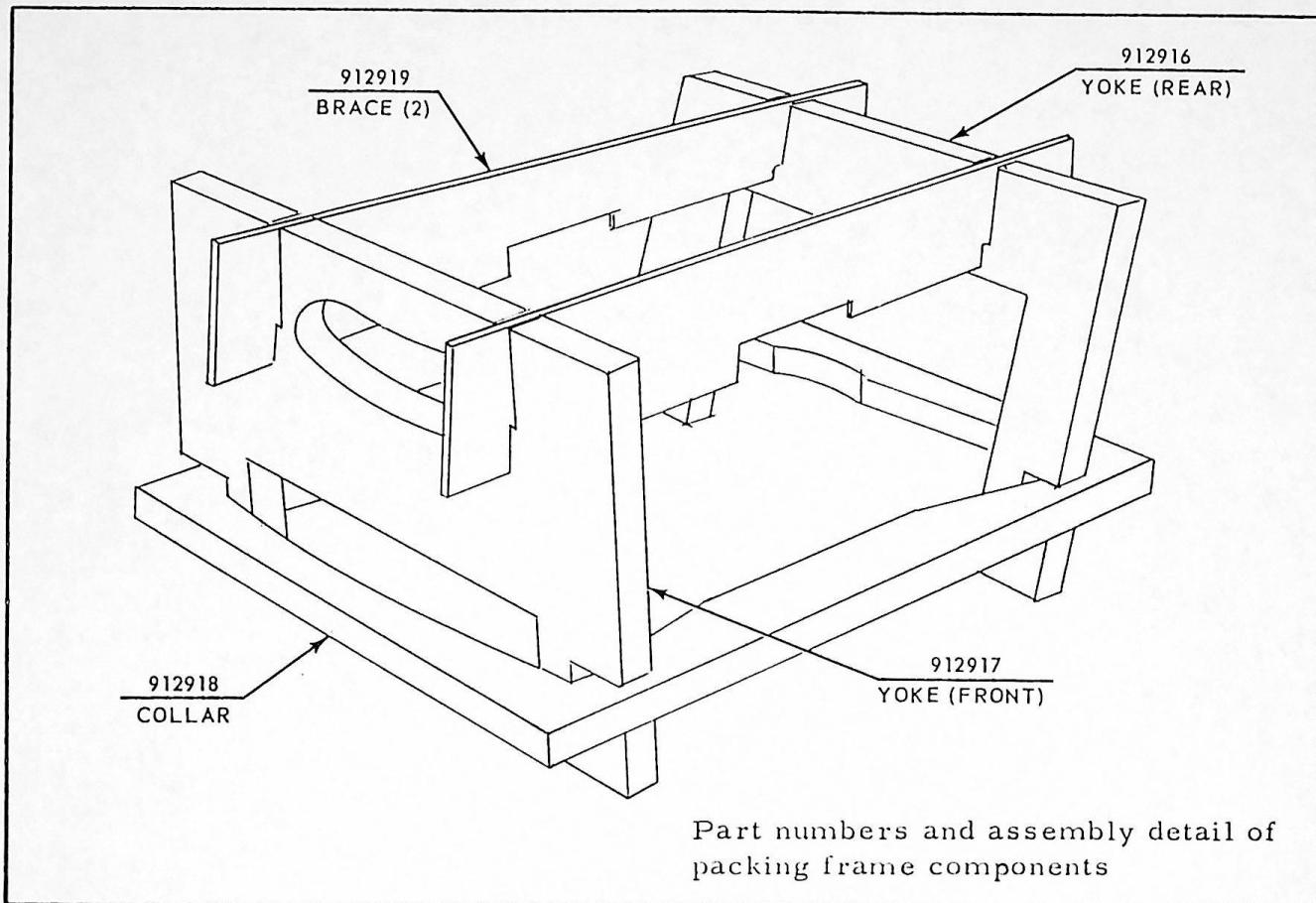
NOTE: To repair stripped Foot screw hole in base of machine equipped with previous style screws, open hole with #25 drill and thread with 10-24 tap. Install revised (912360x1) screw.

3. Place machine, rear first, in plastic bag. Roll and bunch excess bag material over keyboard area and tape securely as shown.

Tape instruction card (red) part no. 912924b on outside of plastic bag.

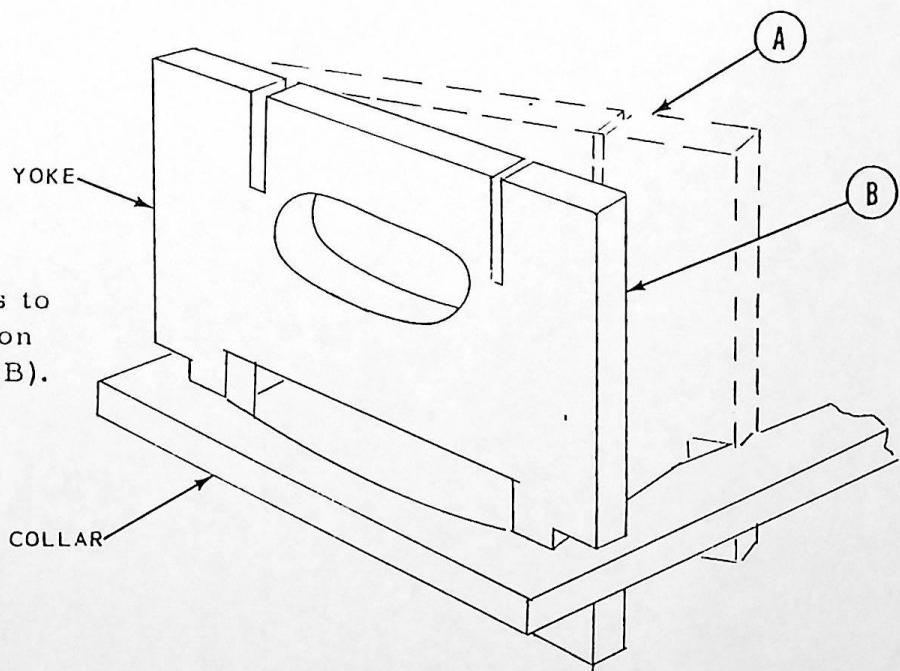
912922  
Poly Film Bag



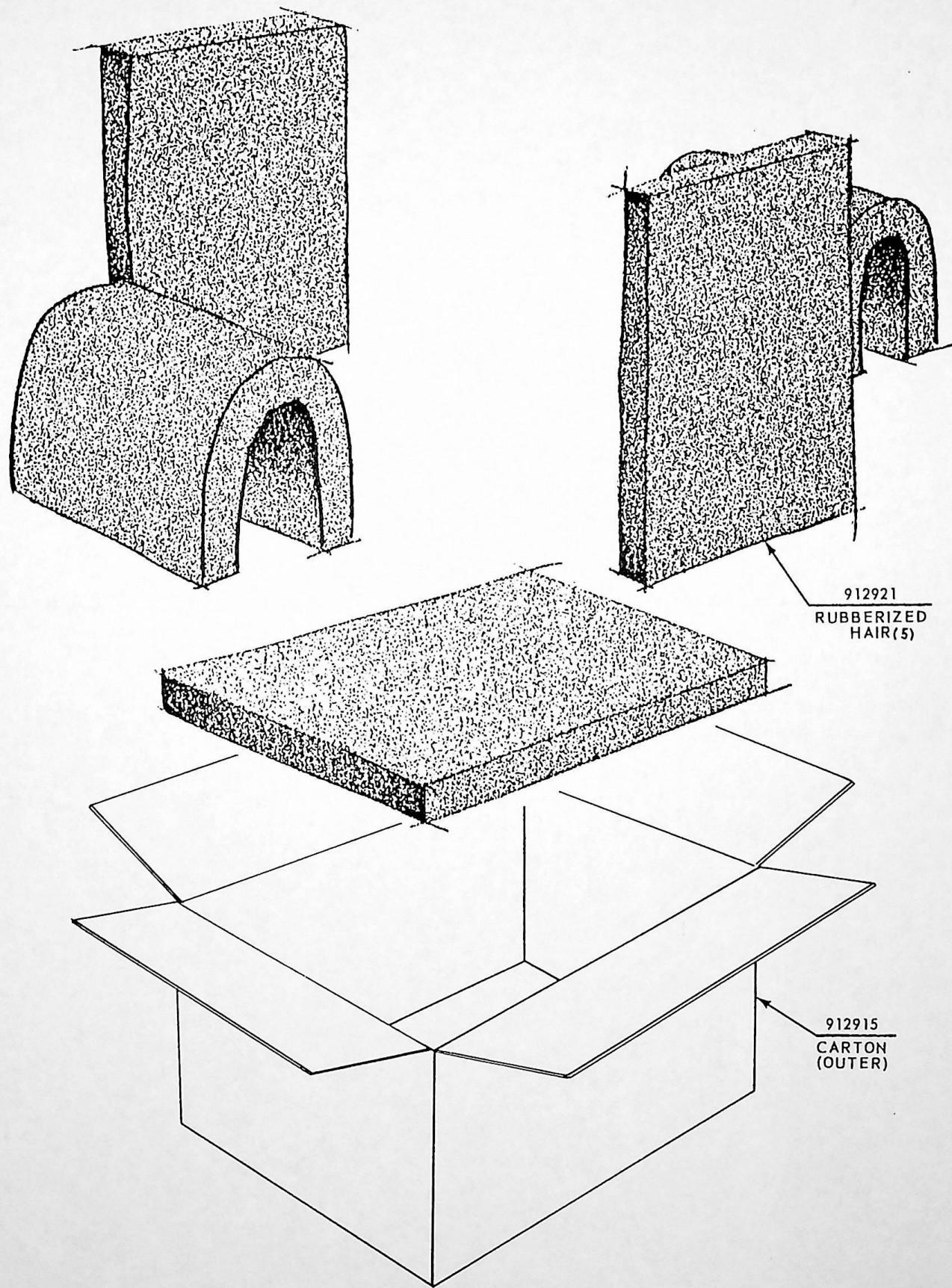


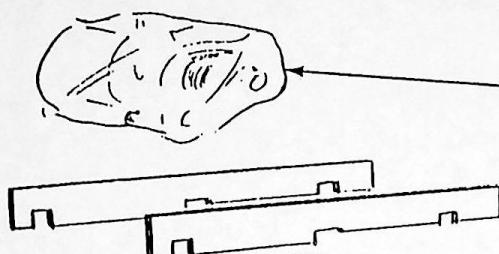
4. Assemble front and rear yokes to collar and place wrapped machine, keyboard end first, into this assembly.

To assemble packing yokes to collar, place yoke in position (A) and push into position (B).



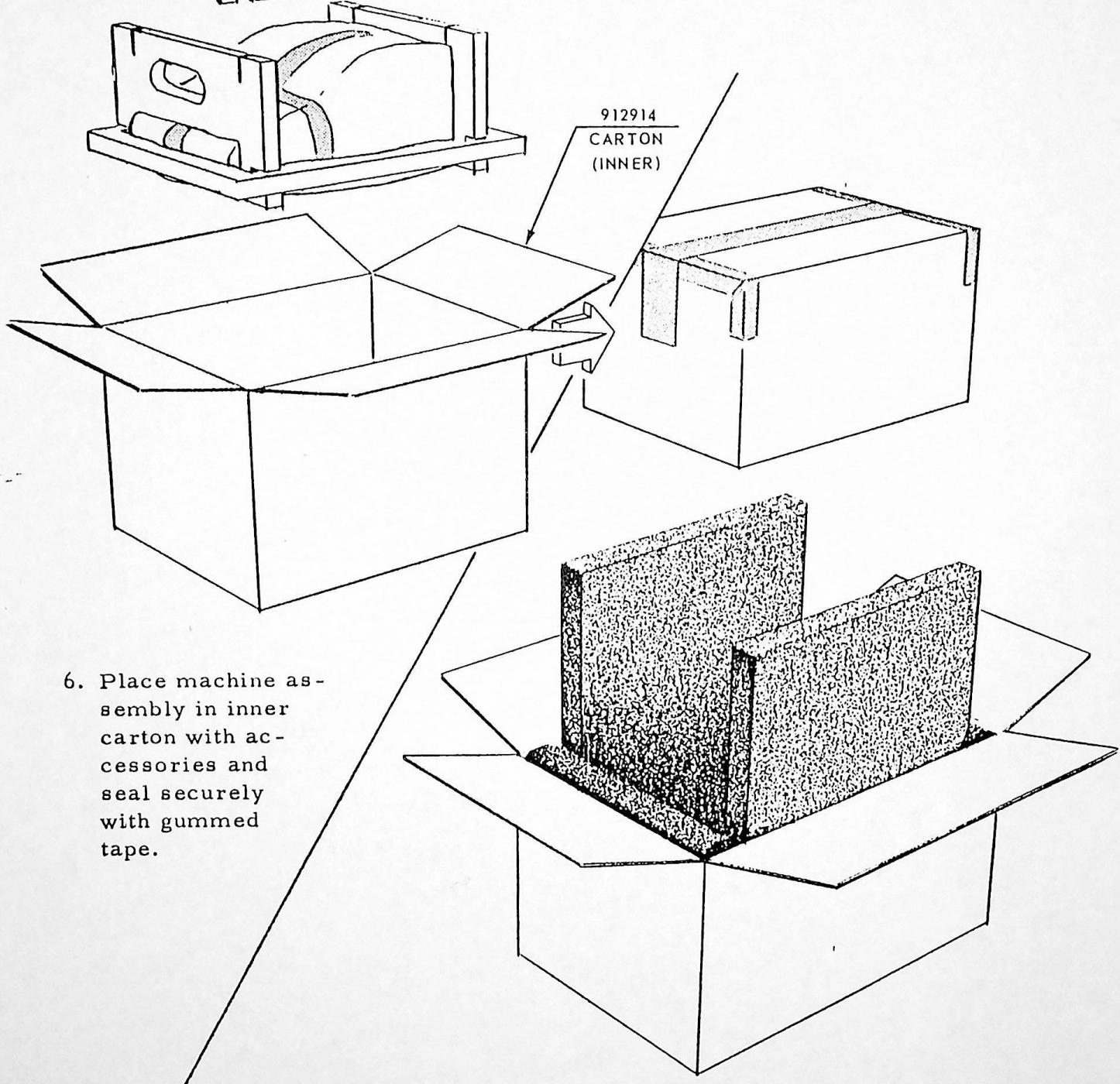
5. Assemble outer carton and hair packing material.





## ACCESSORIES

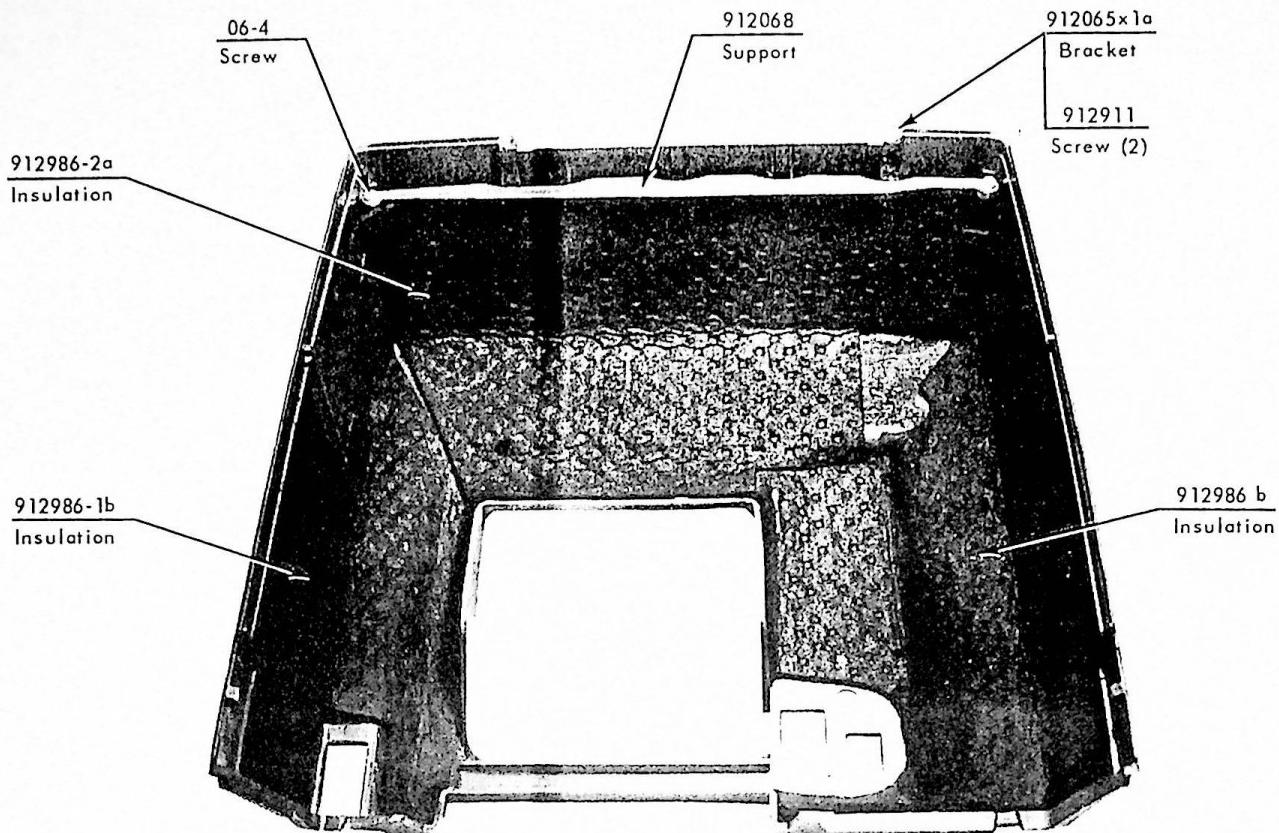
(1) 3 7/16" PAPER ROLL	(1) L 59903a RIBBON SPOOL
(1) 69792 MOTOR CORD	(3) 912360x1 FOOT SCREWS
(1) 912913c DUST COVER	(1) 912923 POLY-FILM BAG
(1) #16 RIBBON	



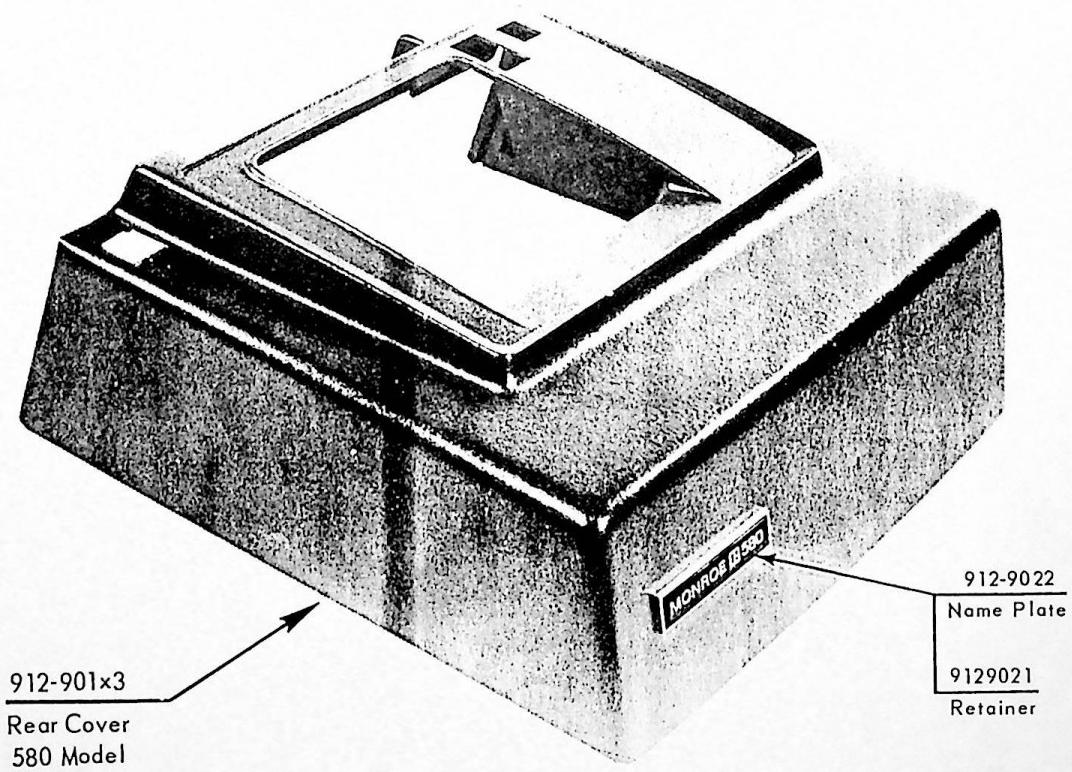
6. Place machine assembly in inner carton with accessories and seal securely with gummed tape.

7. Place inner carton in outer carton with packing material and secure top closed.

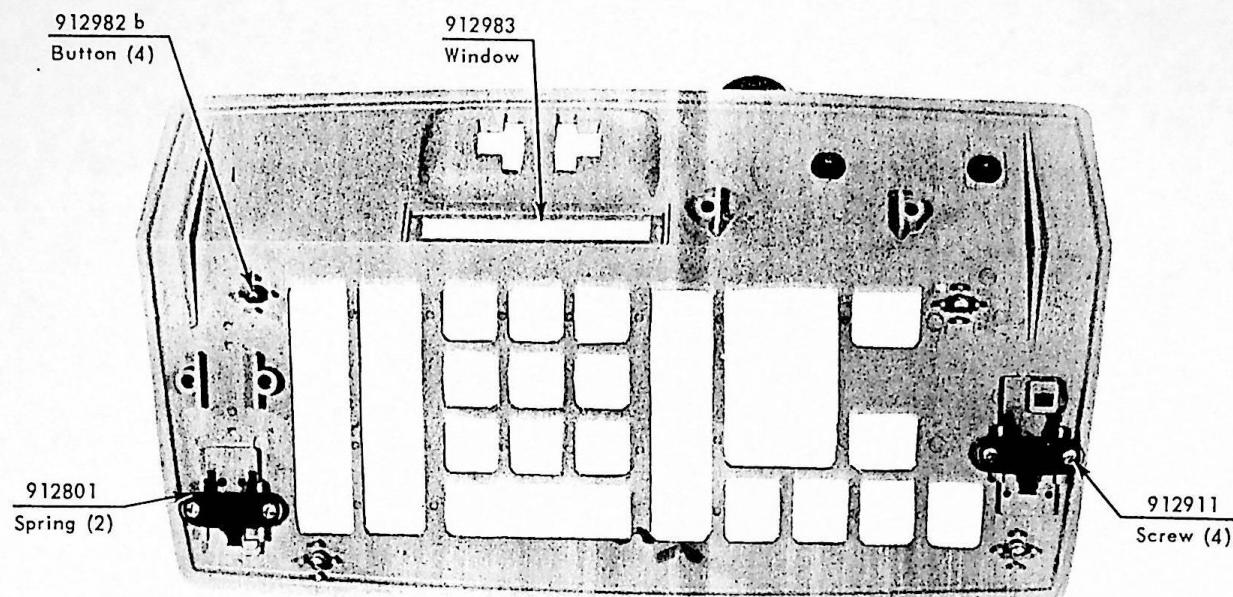
1-30-68



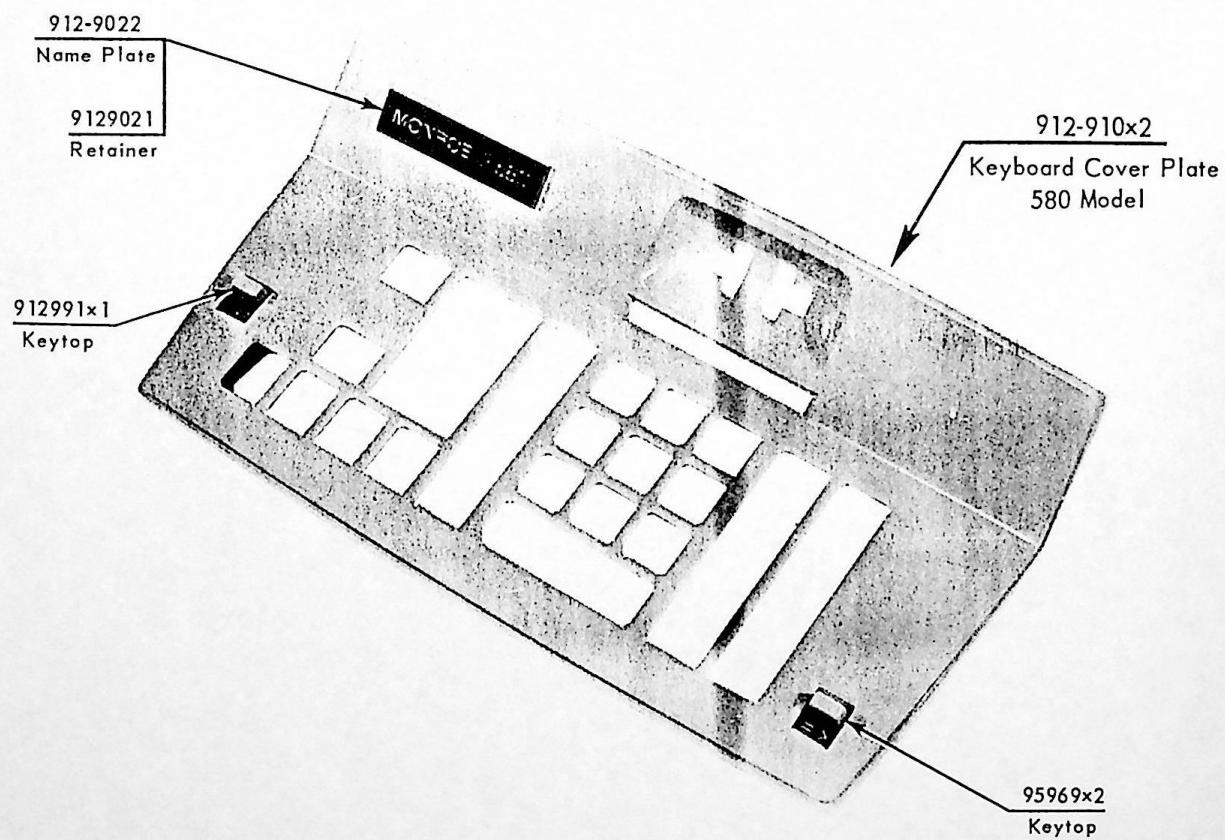
580 MODEL



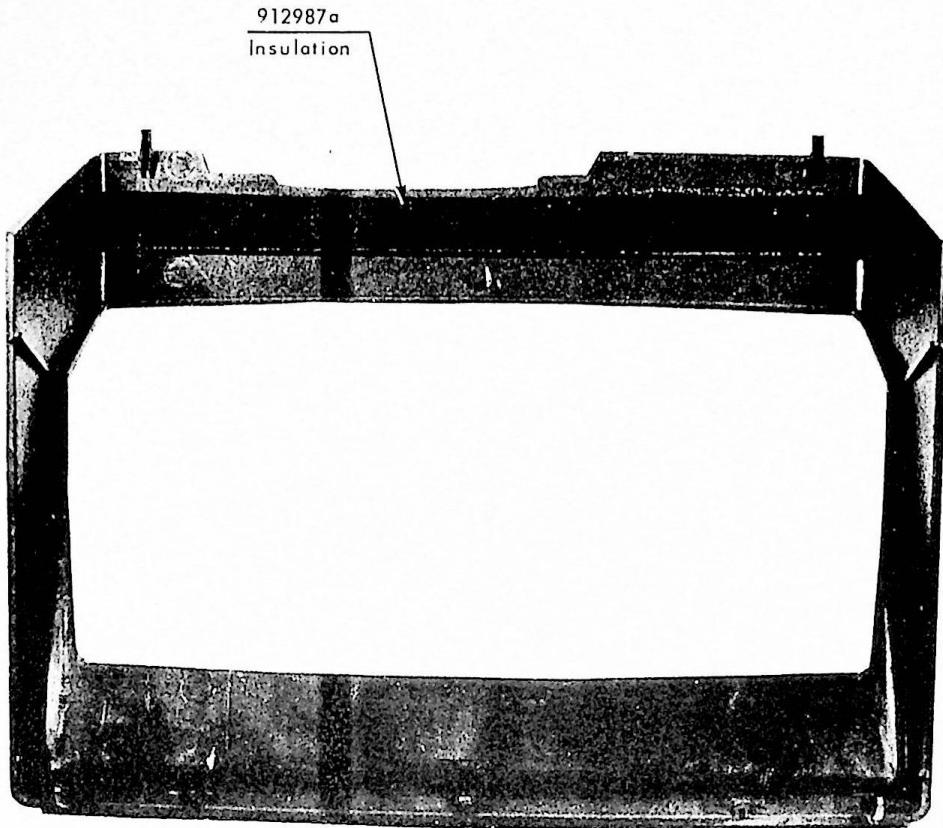
1-30-68



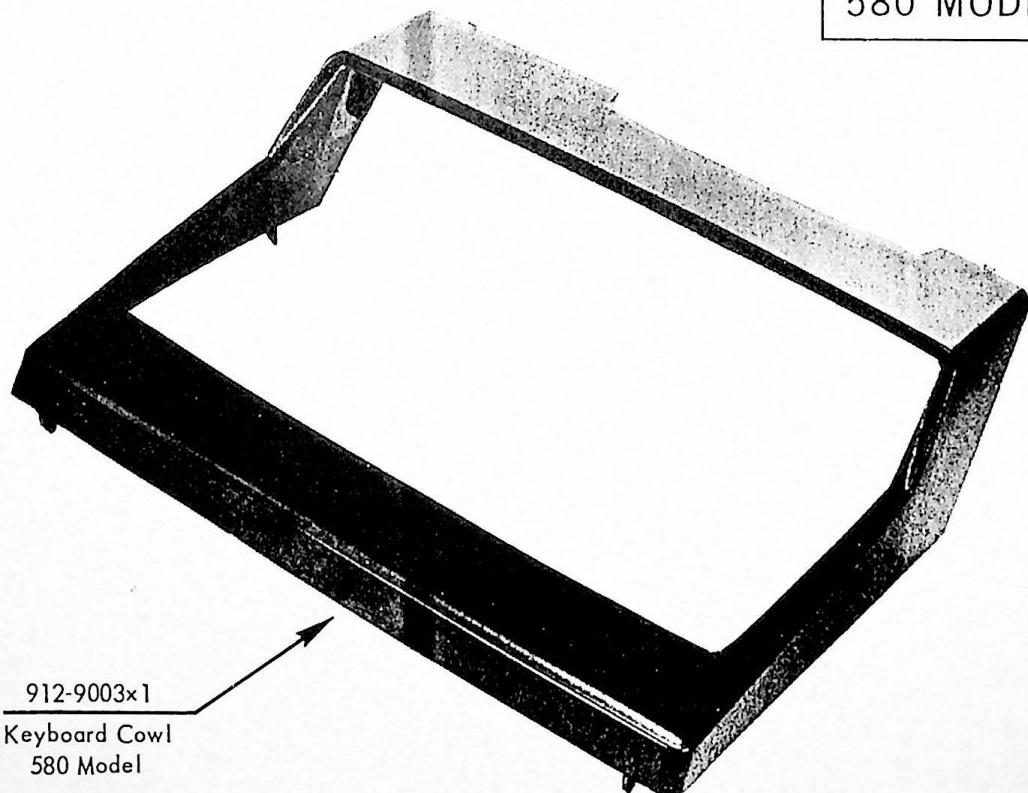
580 MODEL



1-30-68



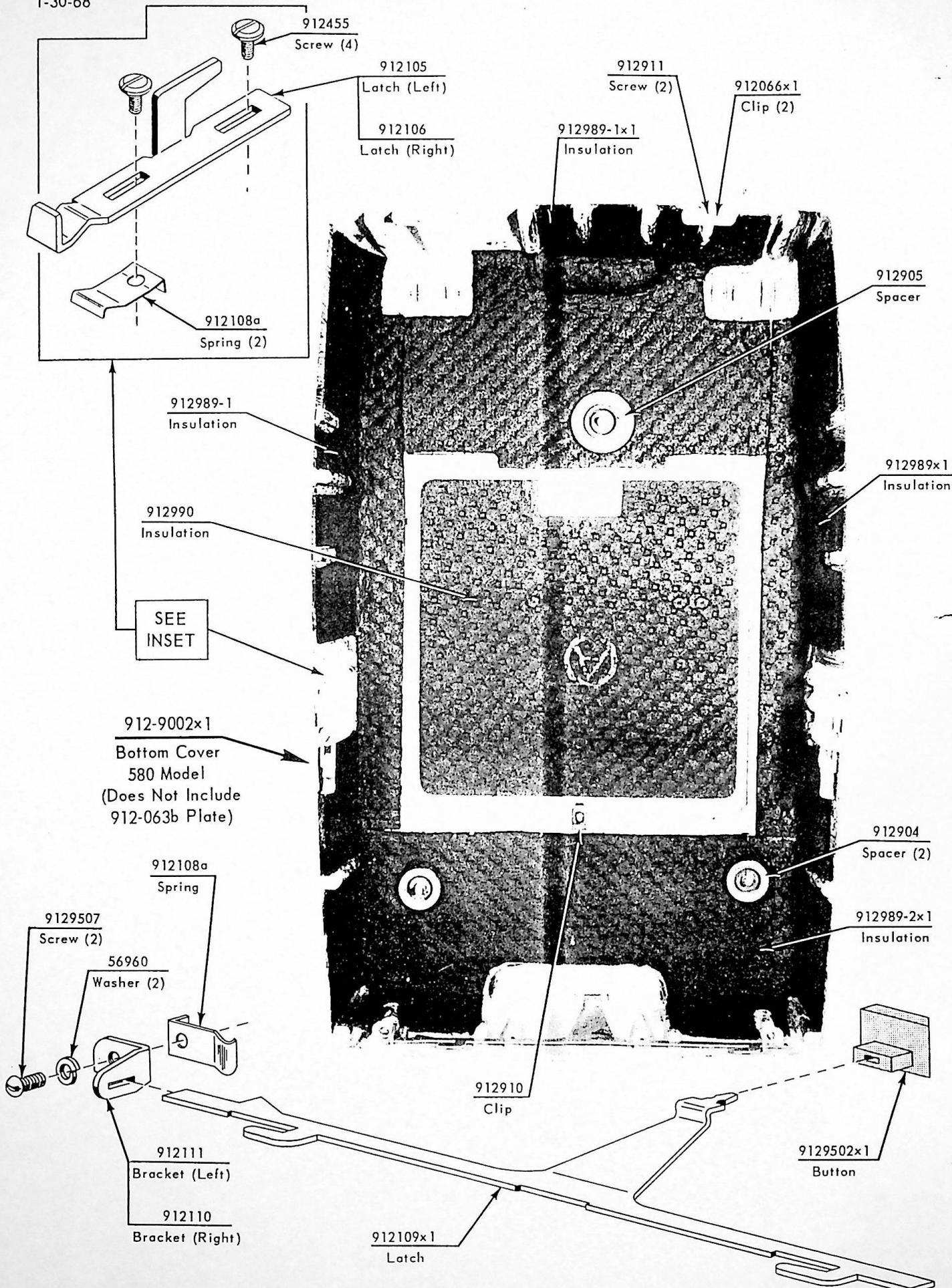
580 MODEL

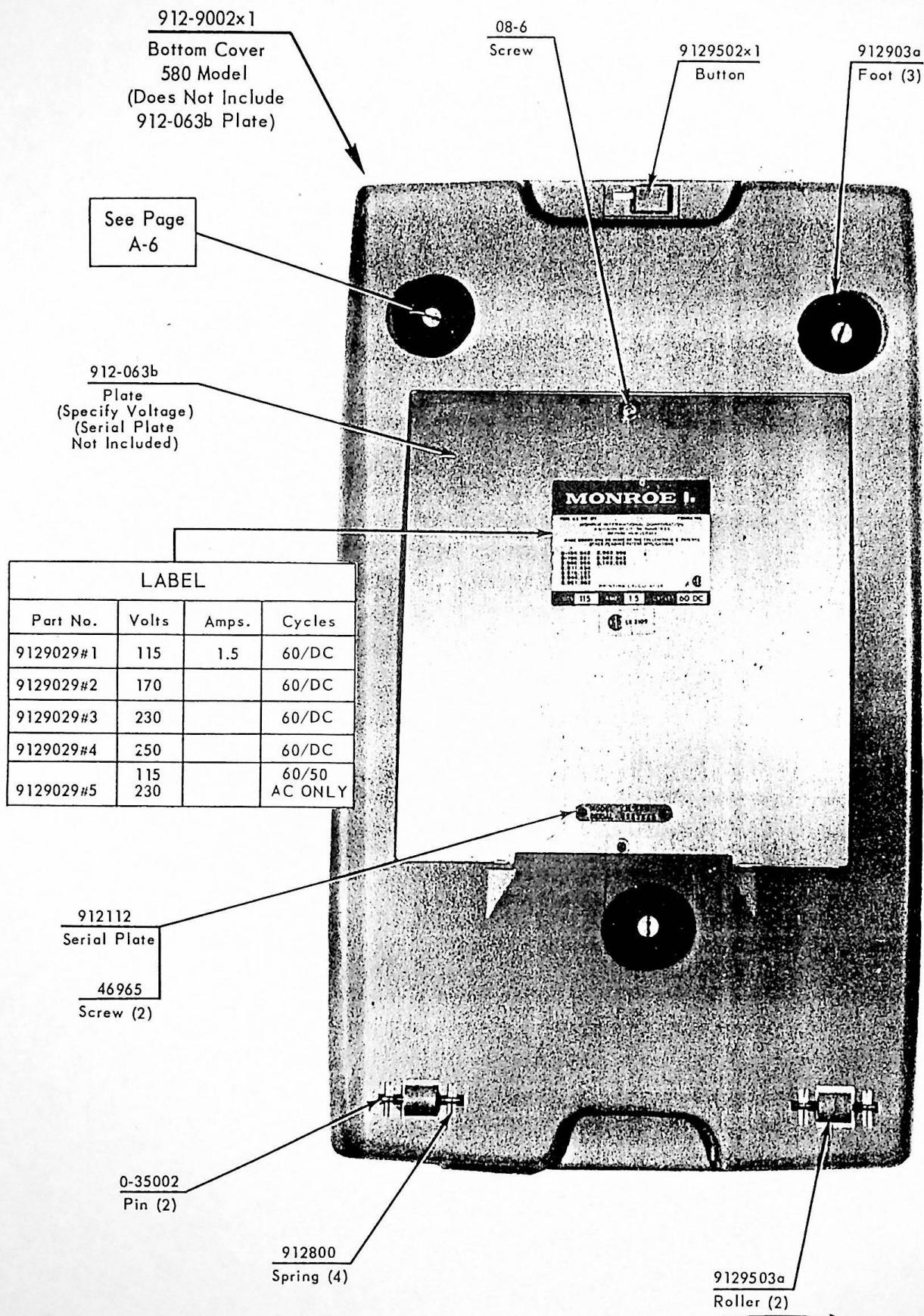


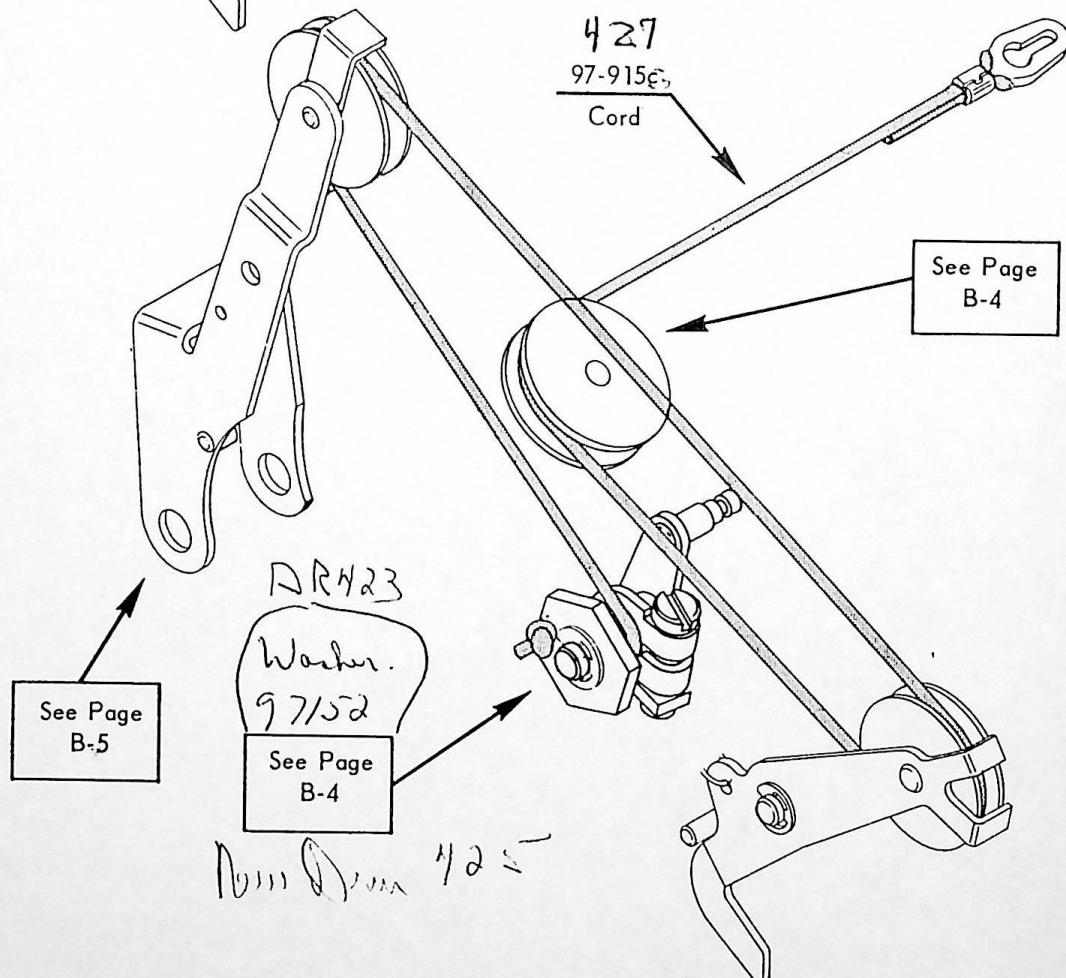
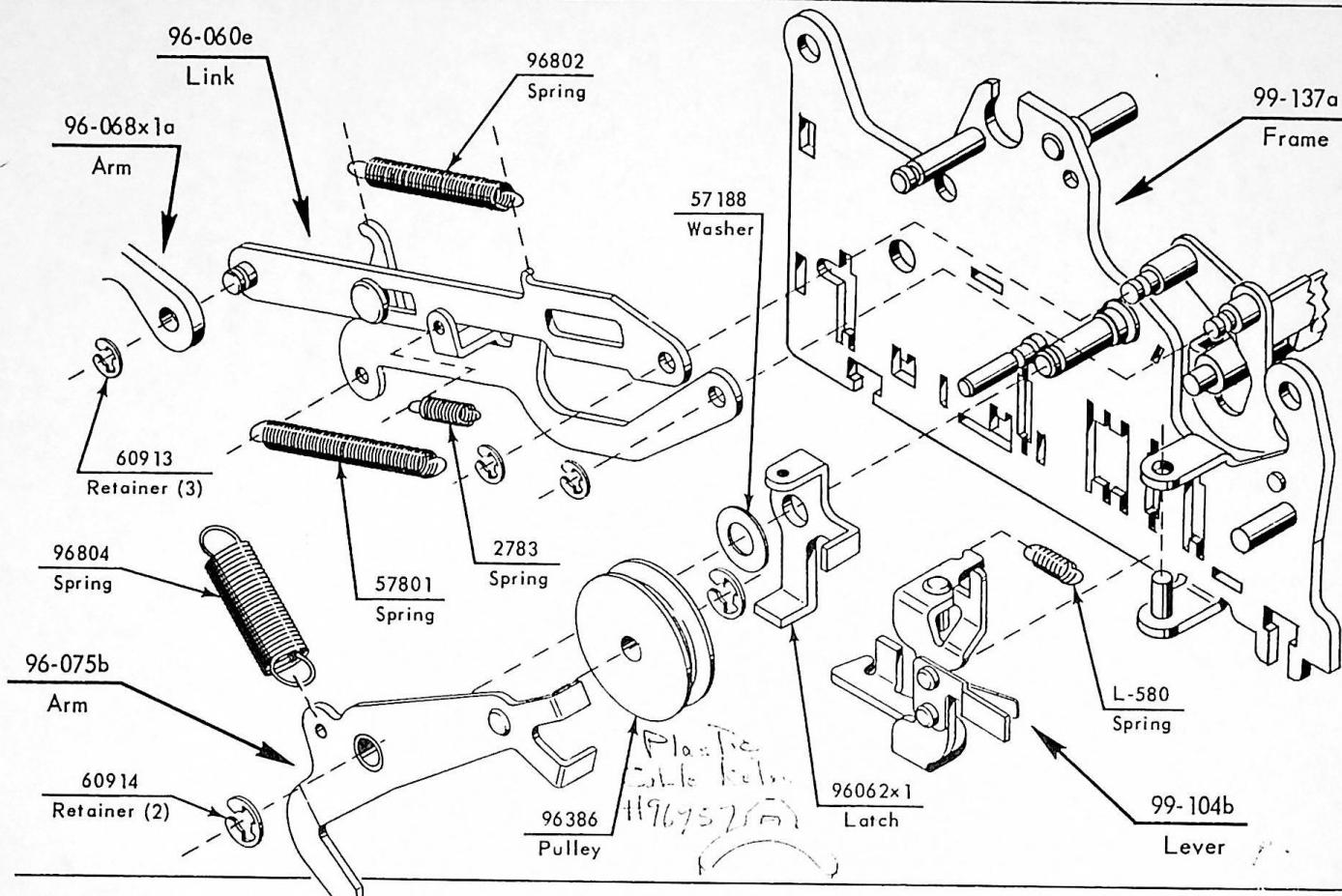
912-9003x1  
Keyboard Cowl  
580 Model

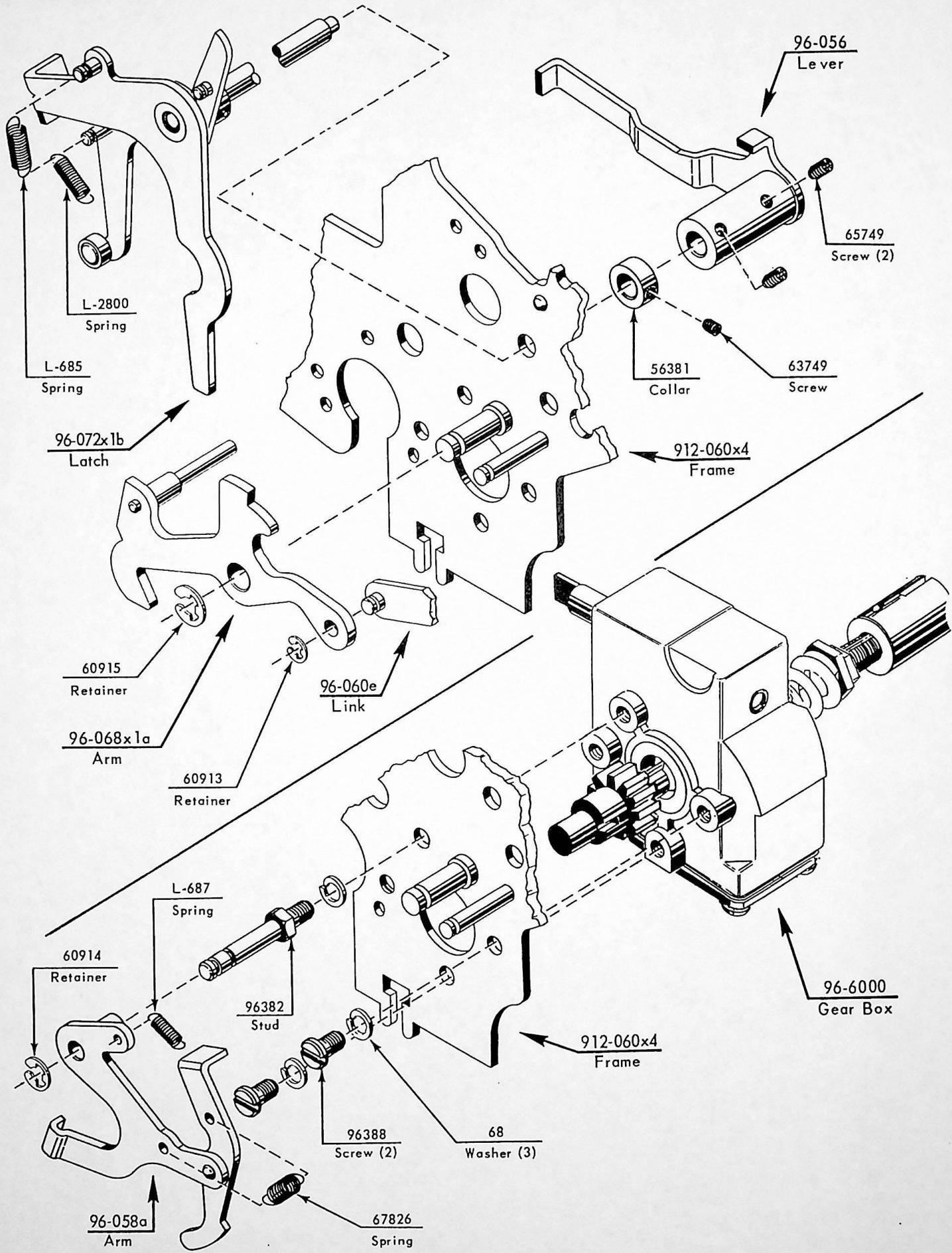
912987a  
Insulation

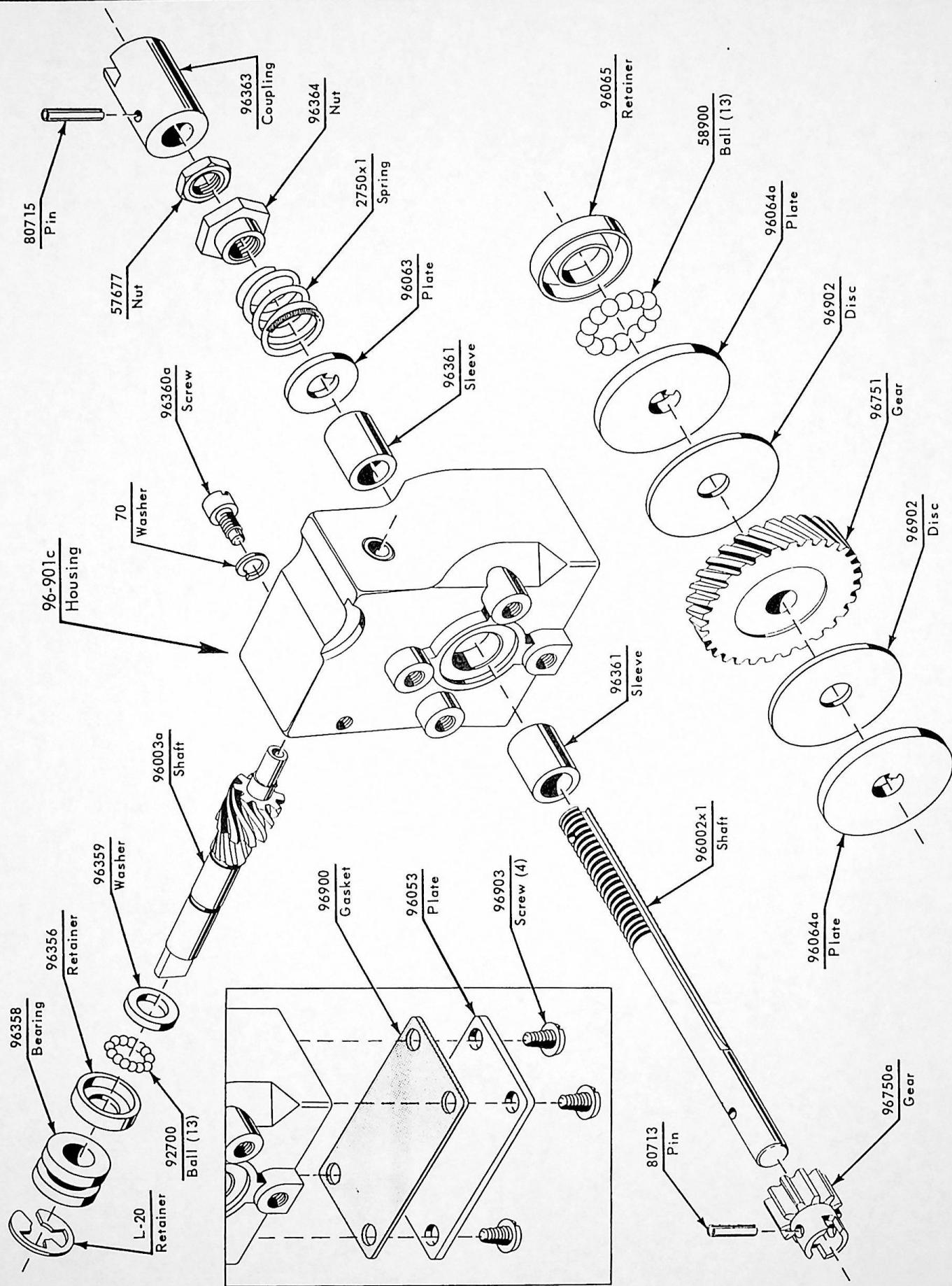
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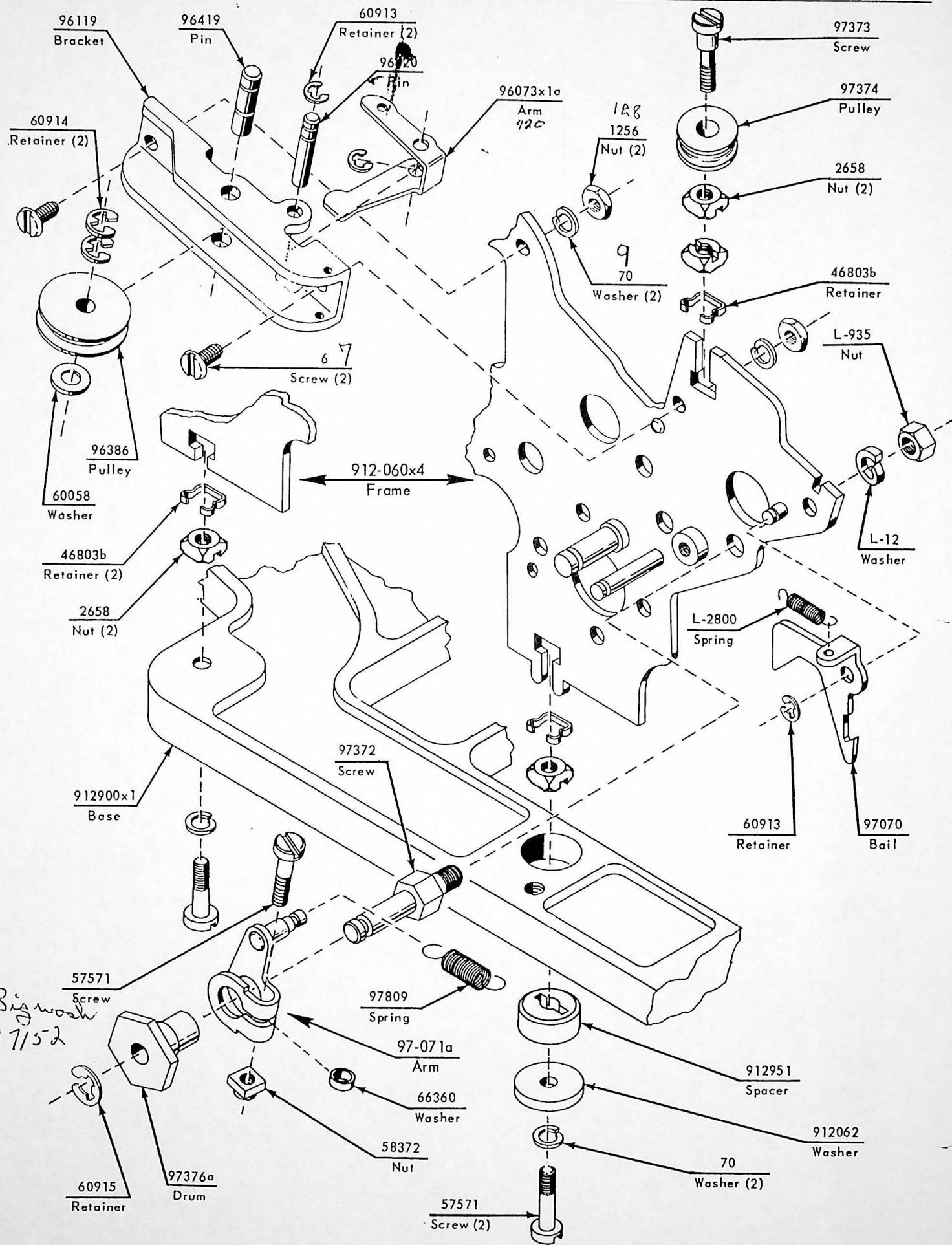


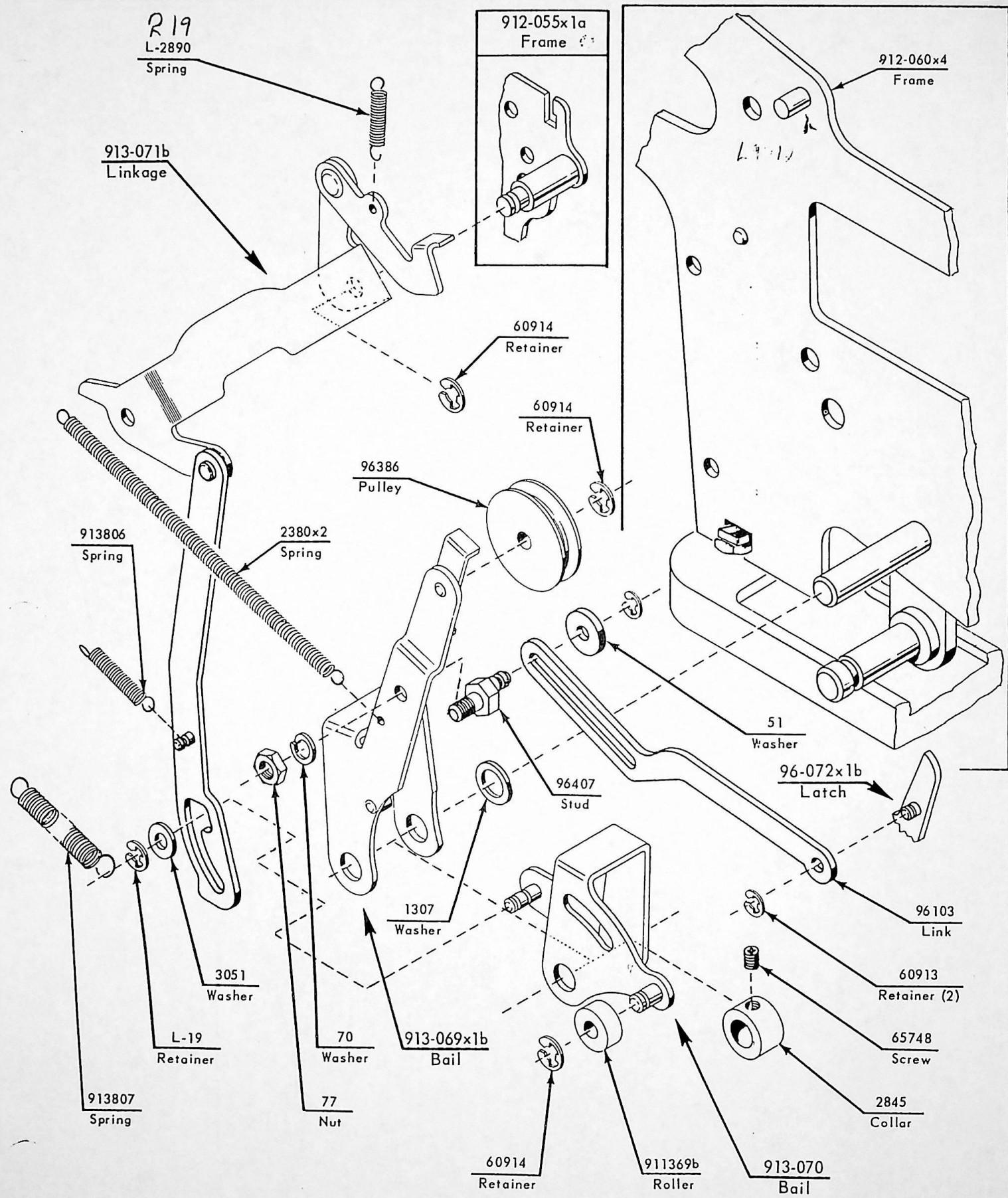


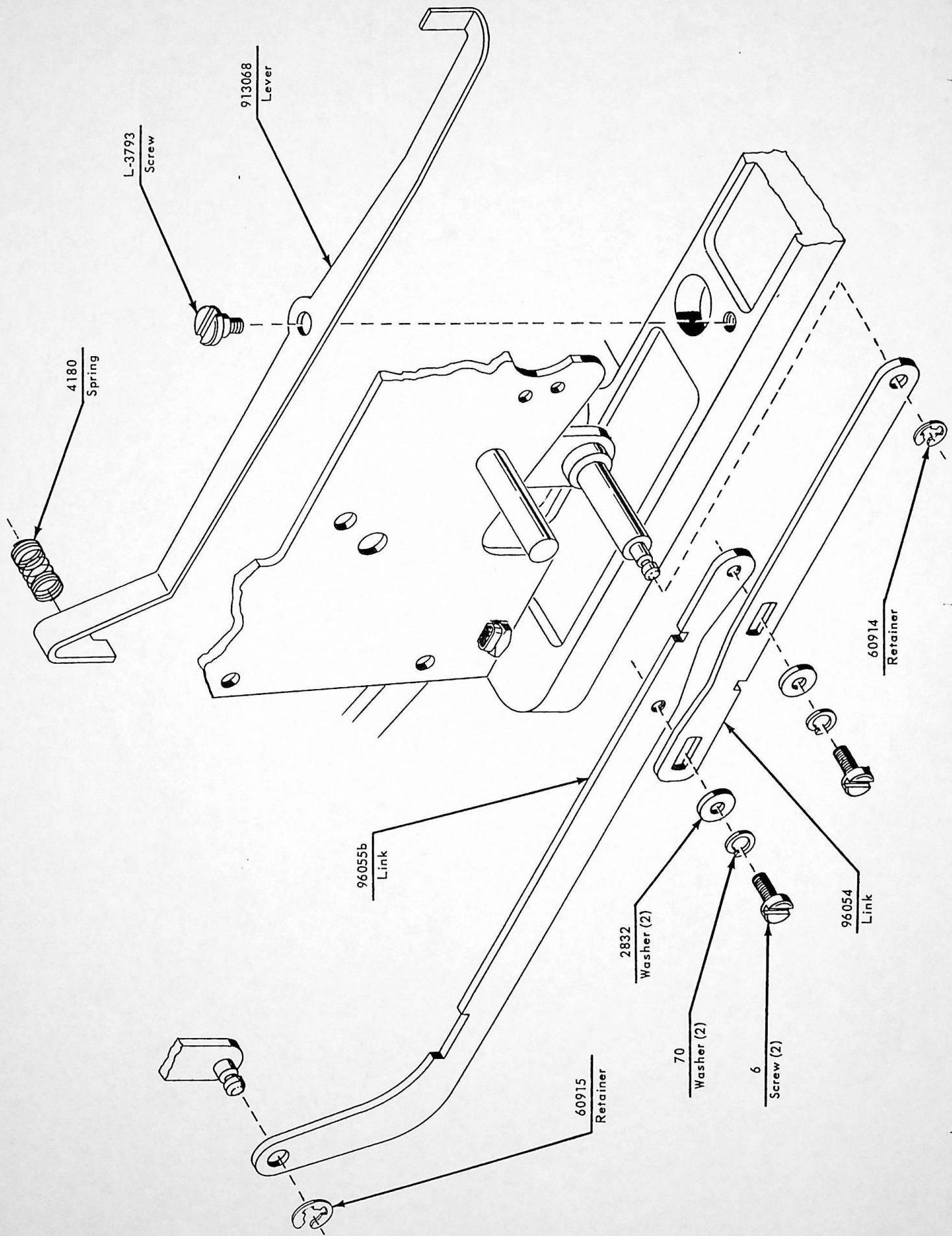


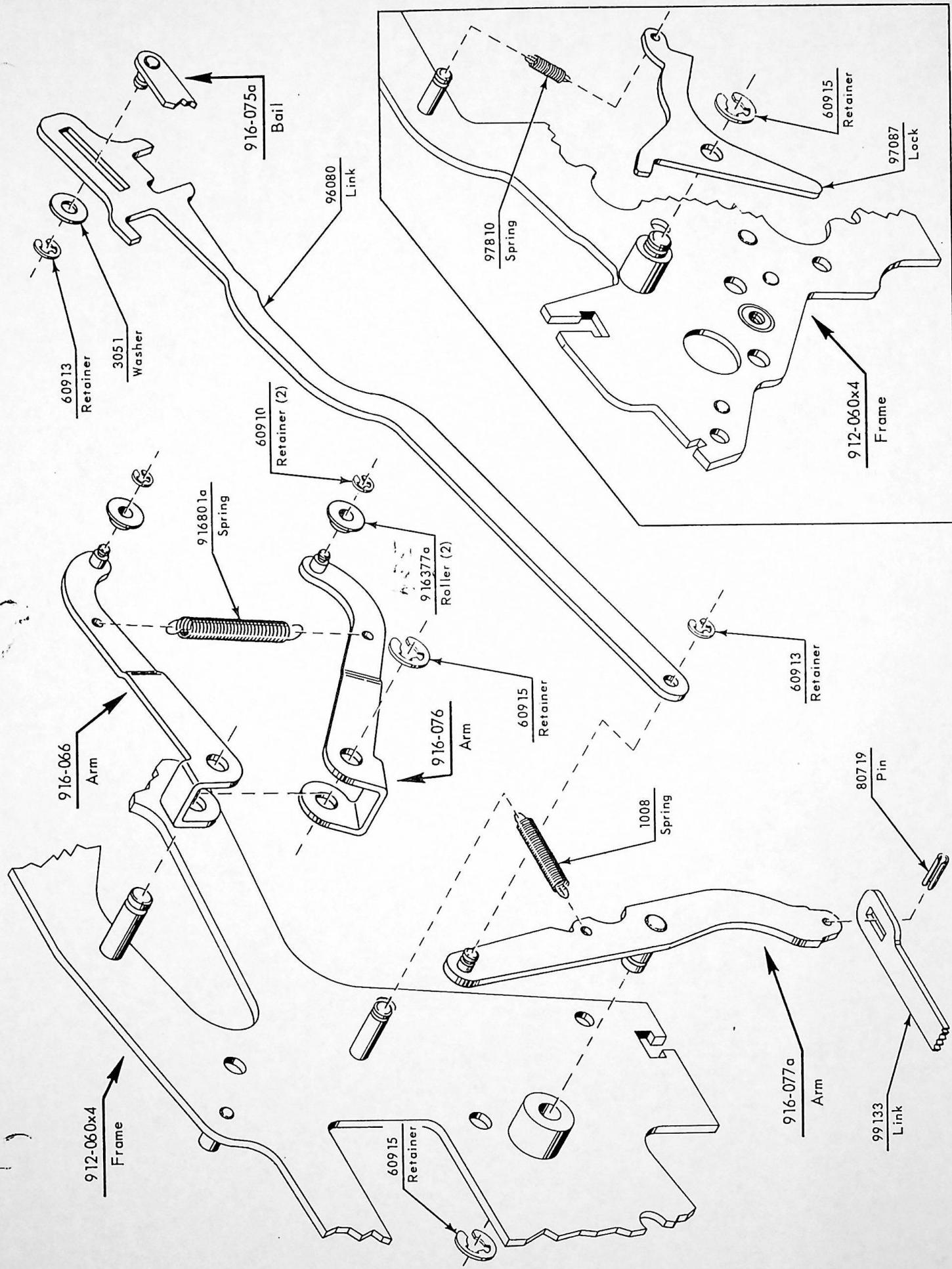


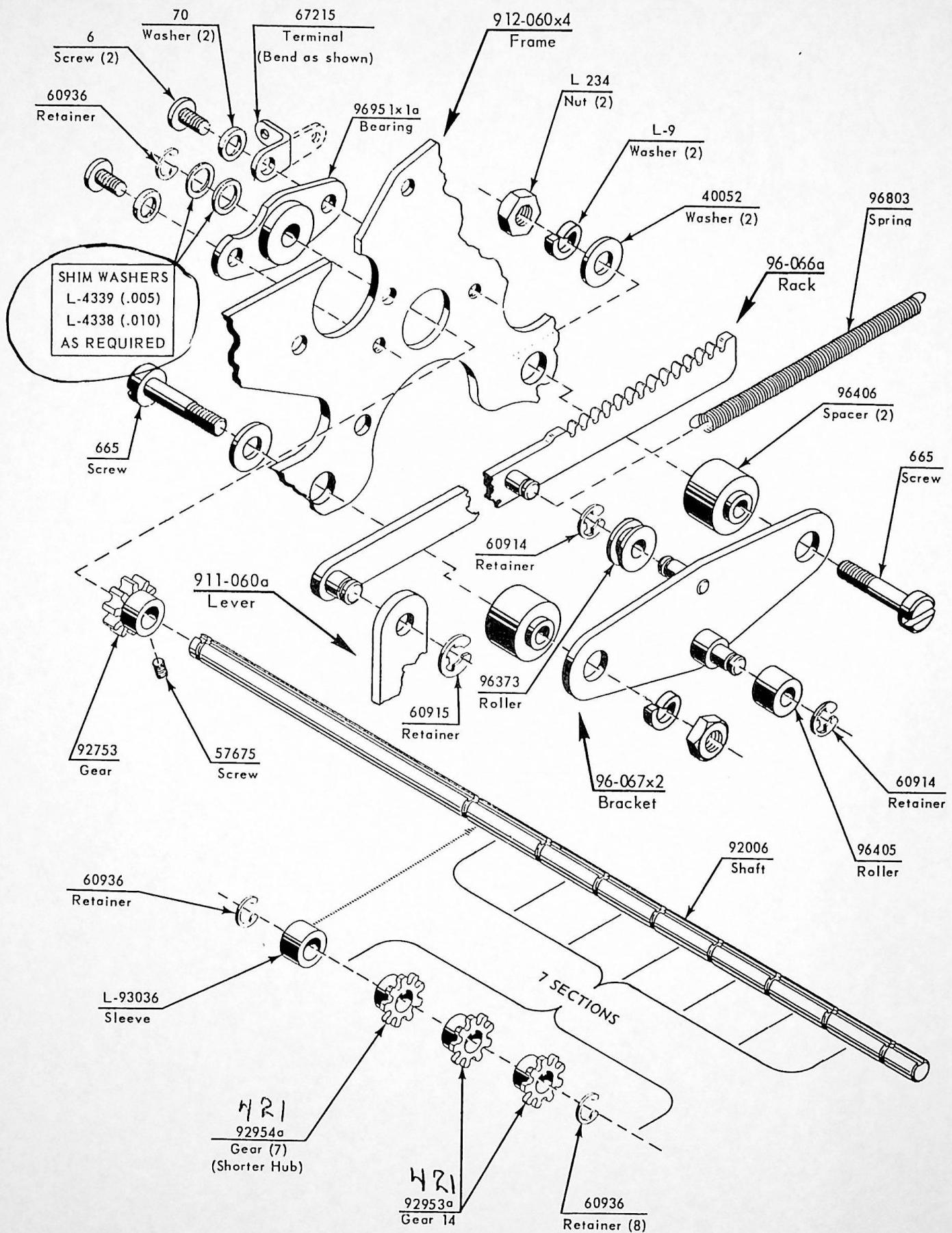


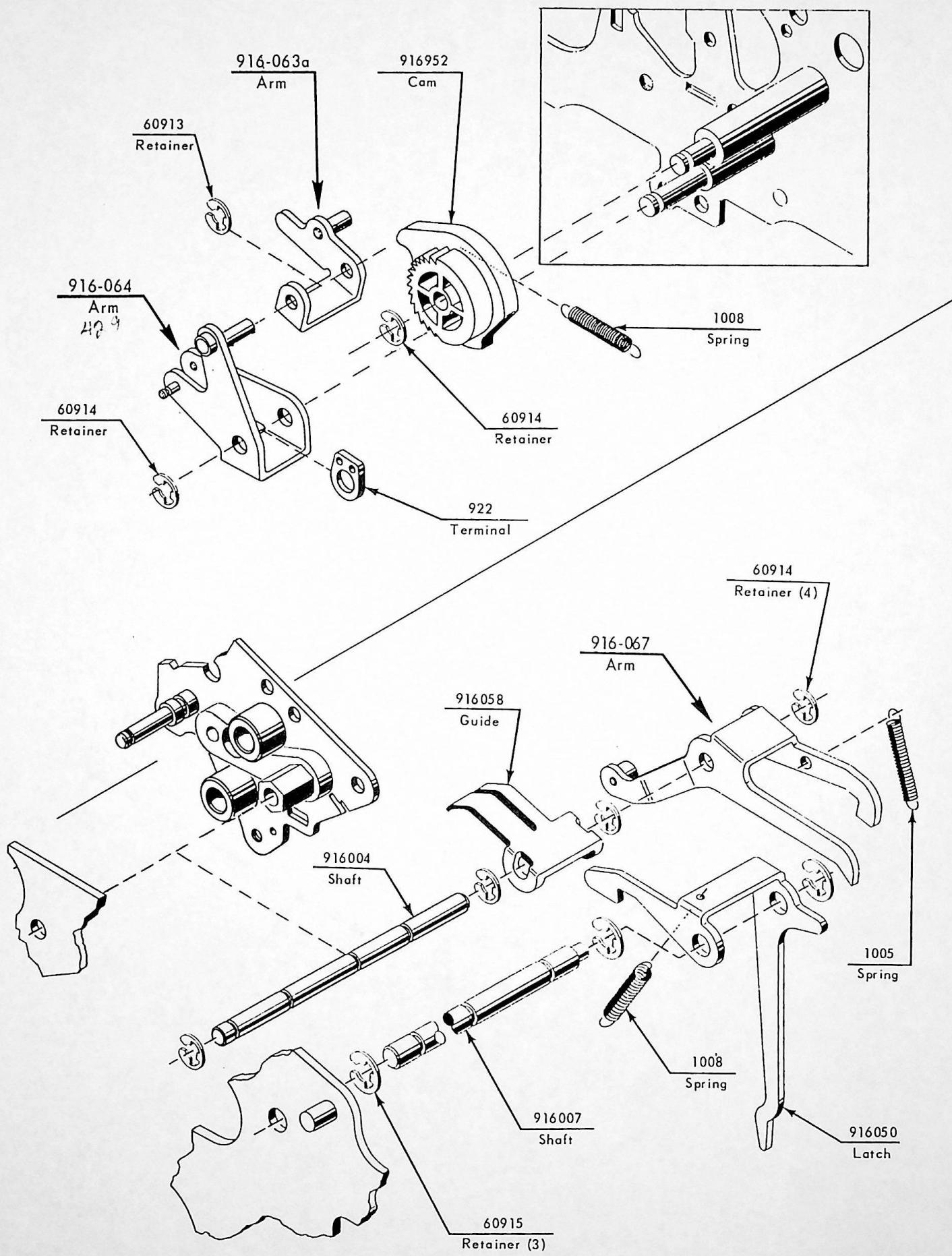


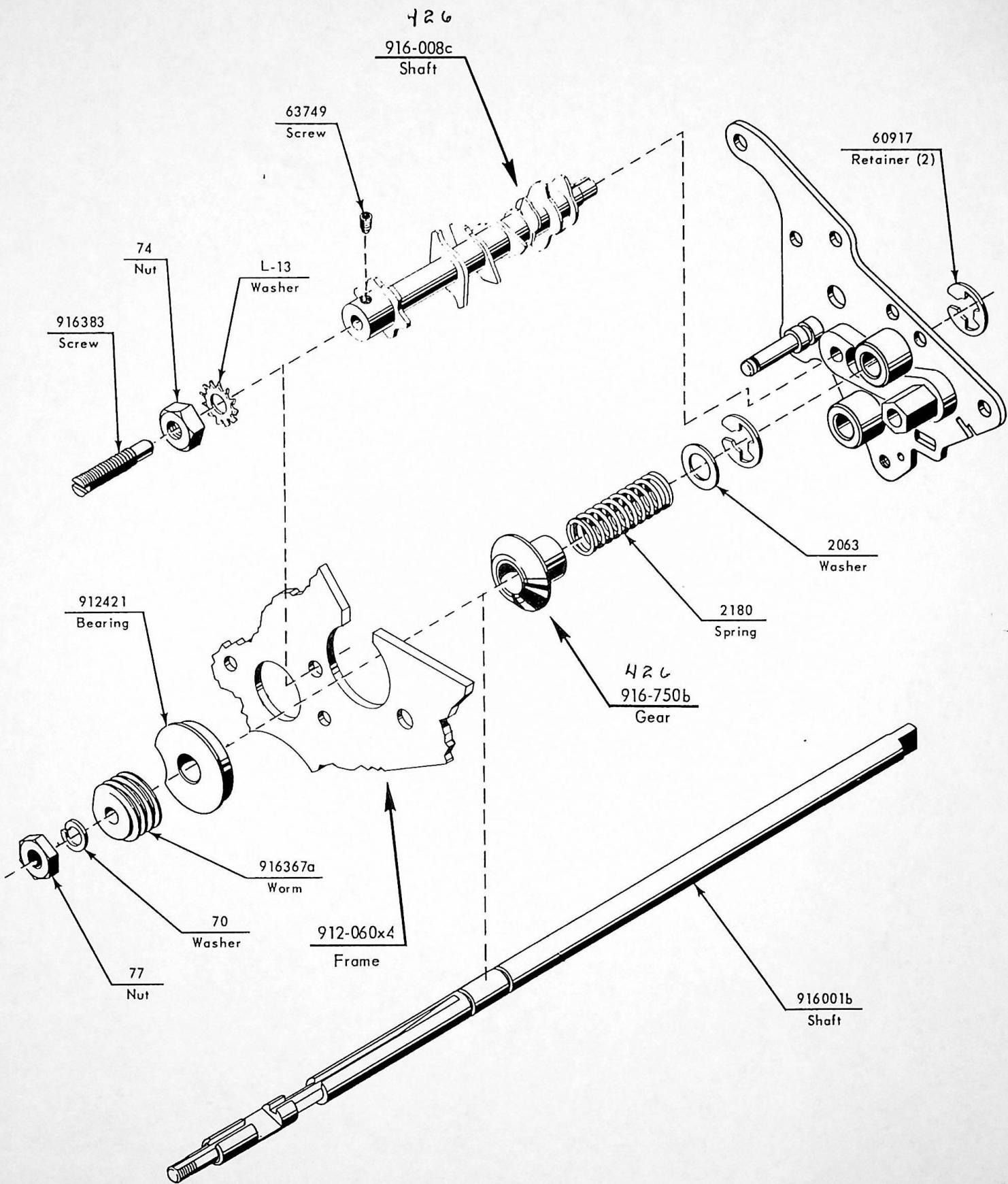




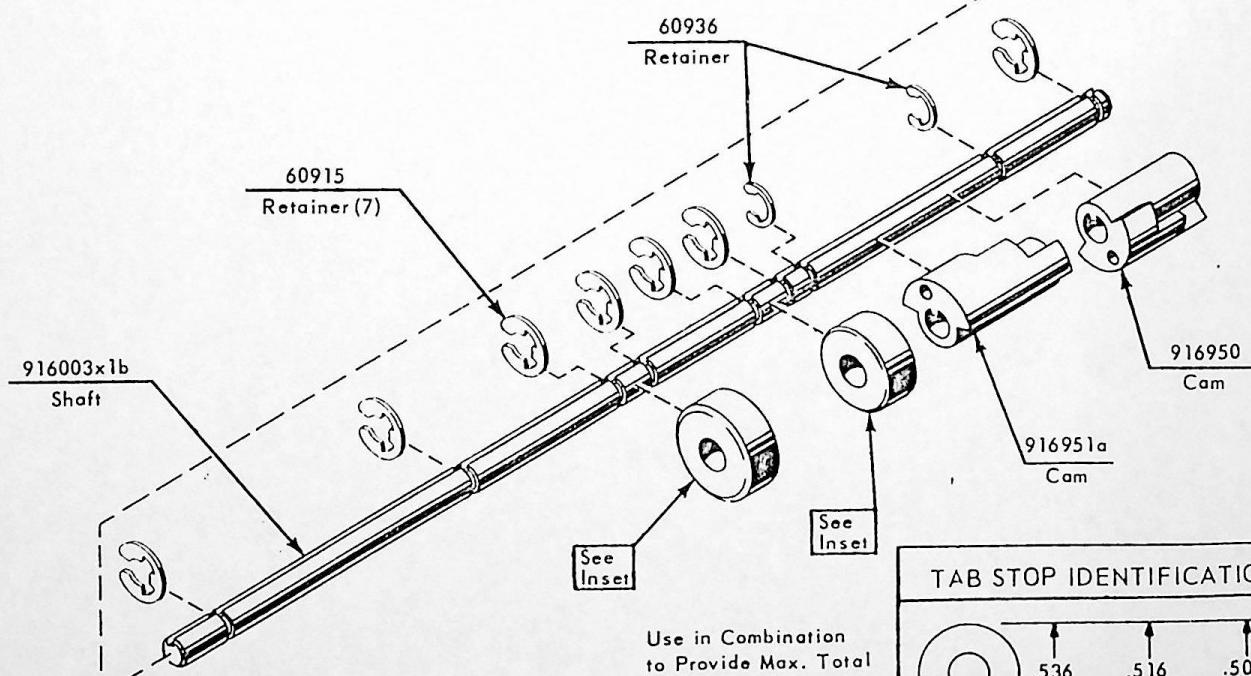
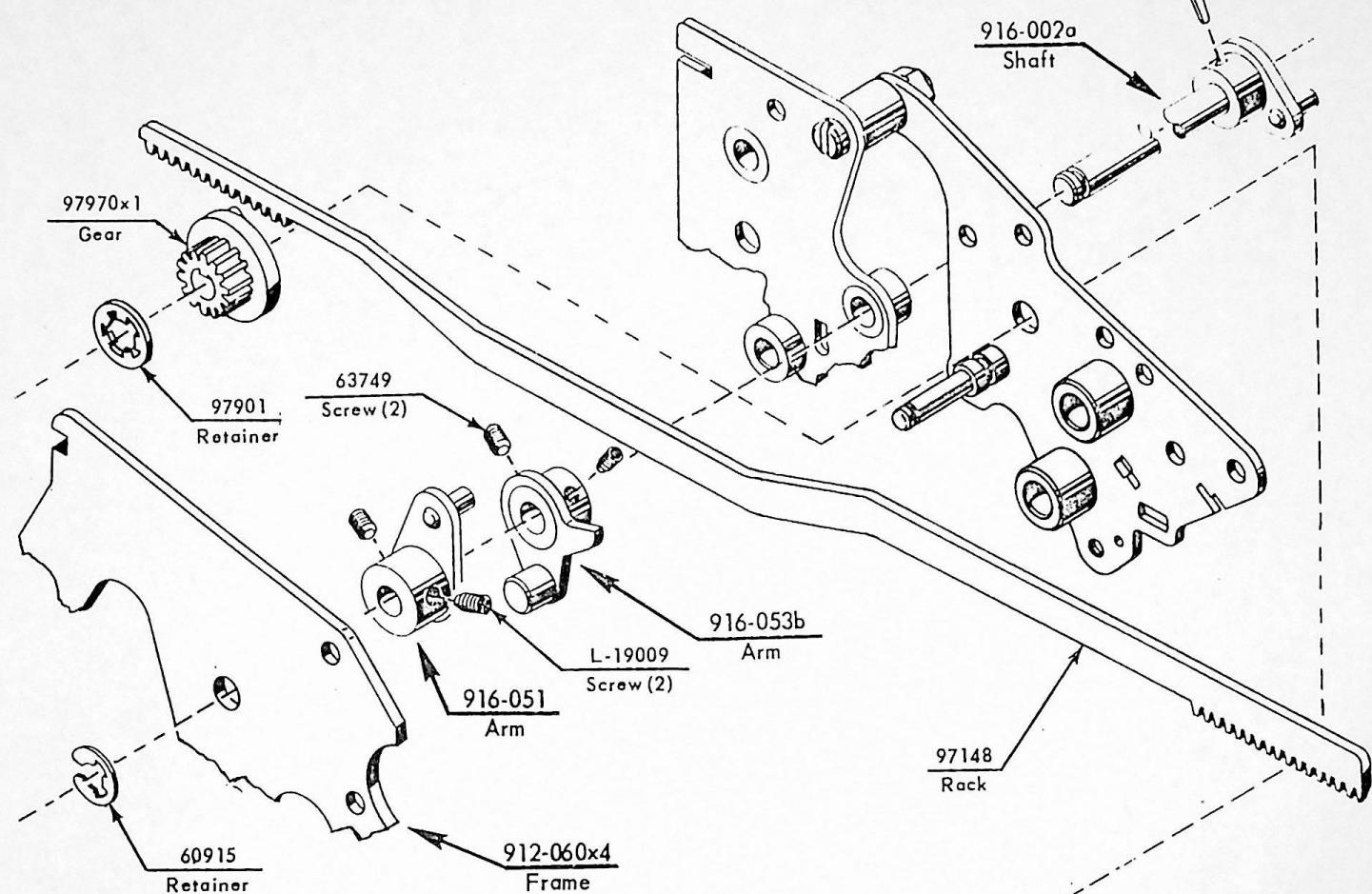








Rev. 3-30-67

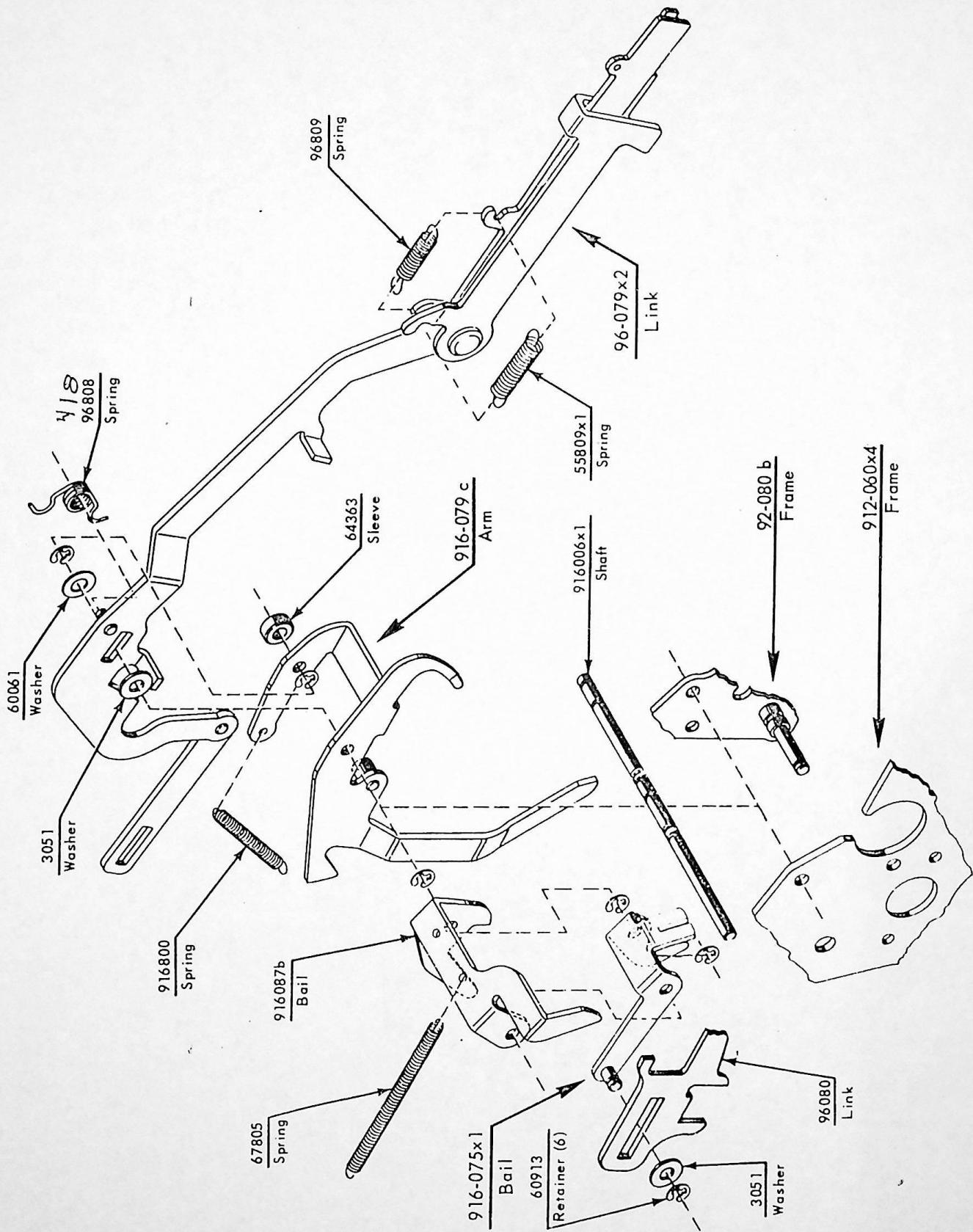


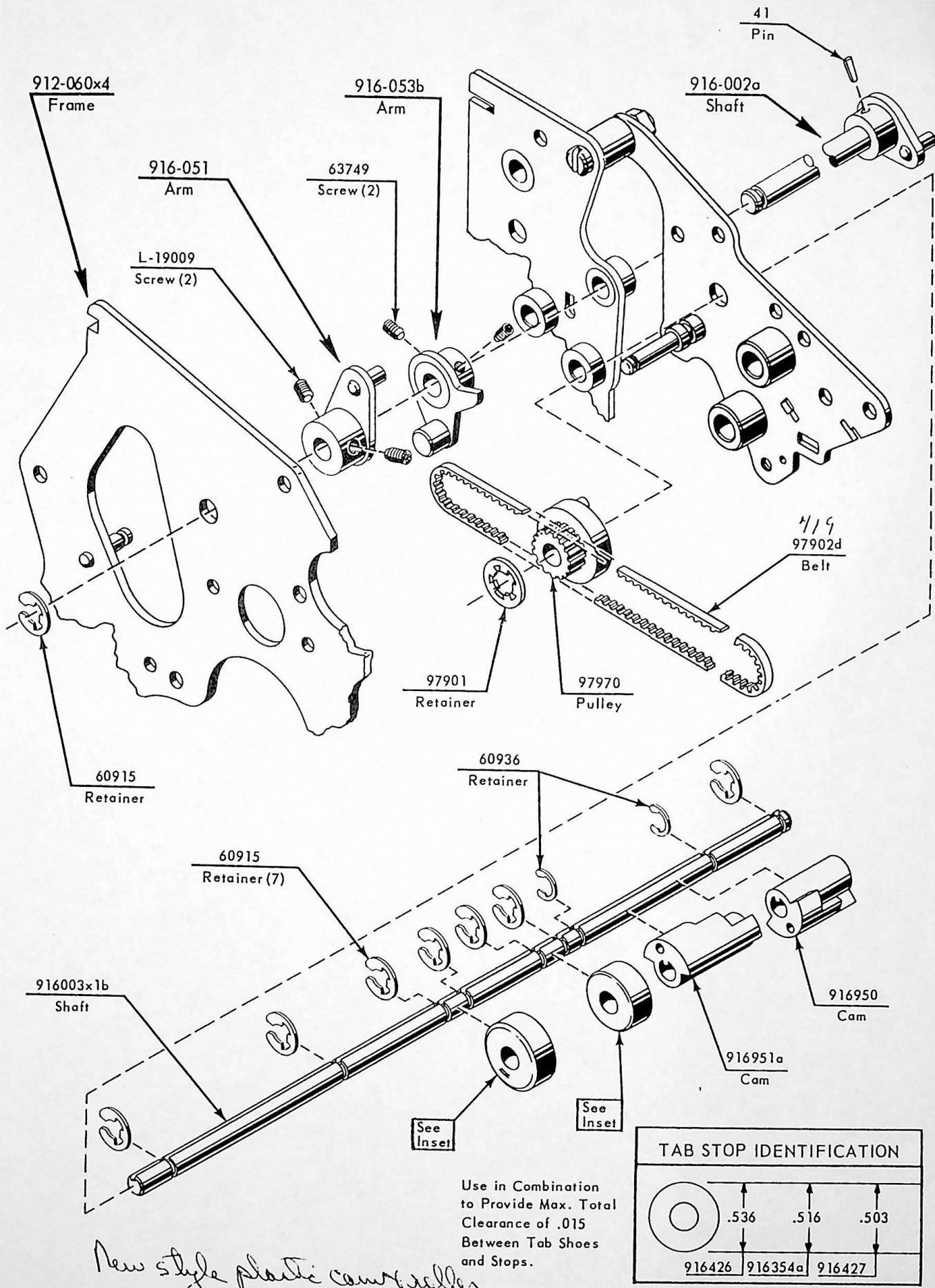
TAB STOP IDENTIFICATION		
.536	.516	.503
916426	916354a	916427

New style plastic cam & roller

916428 & 916960

Rev. 3-30-67





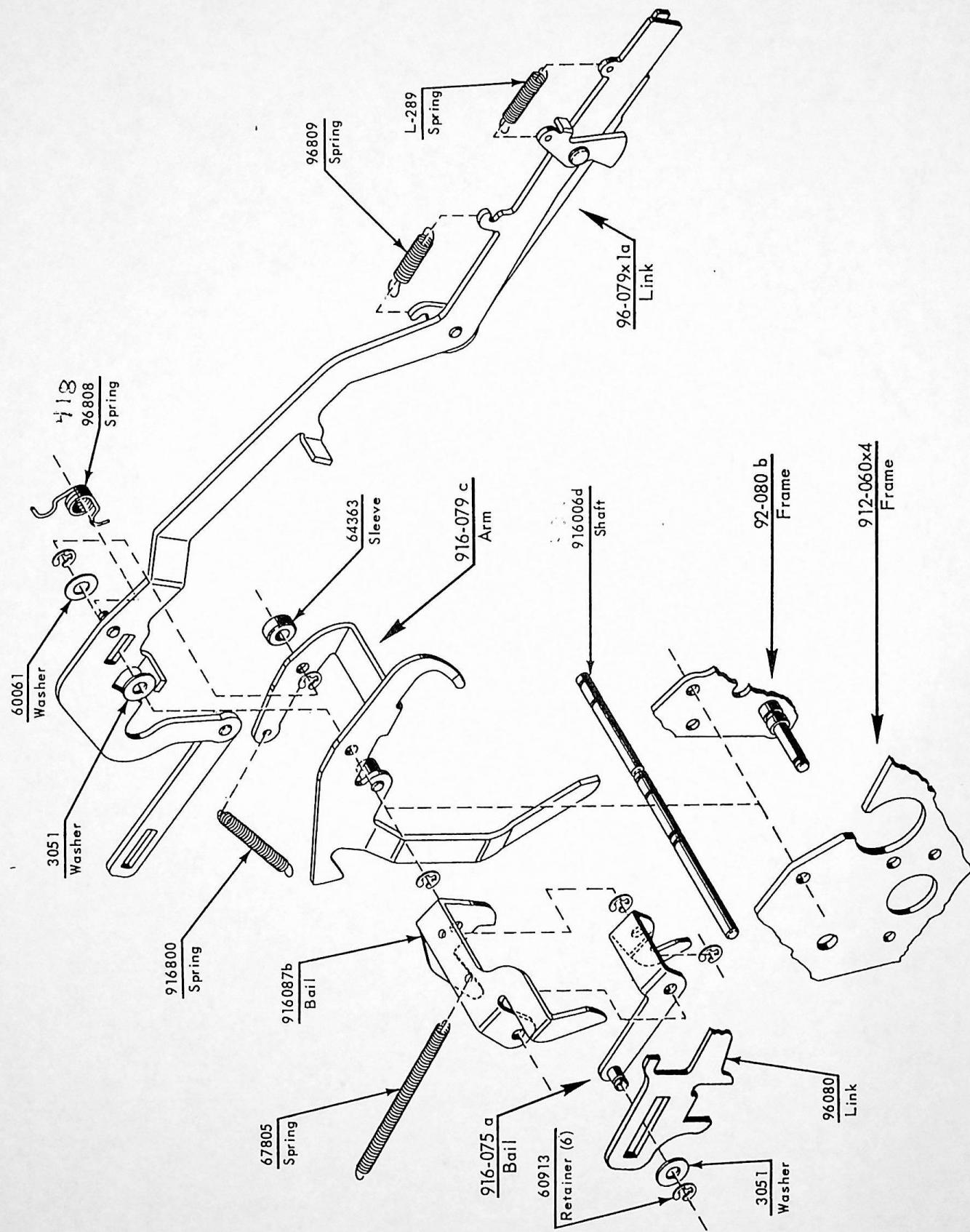
New style plastic controller

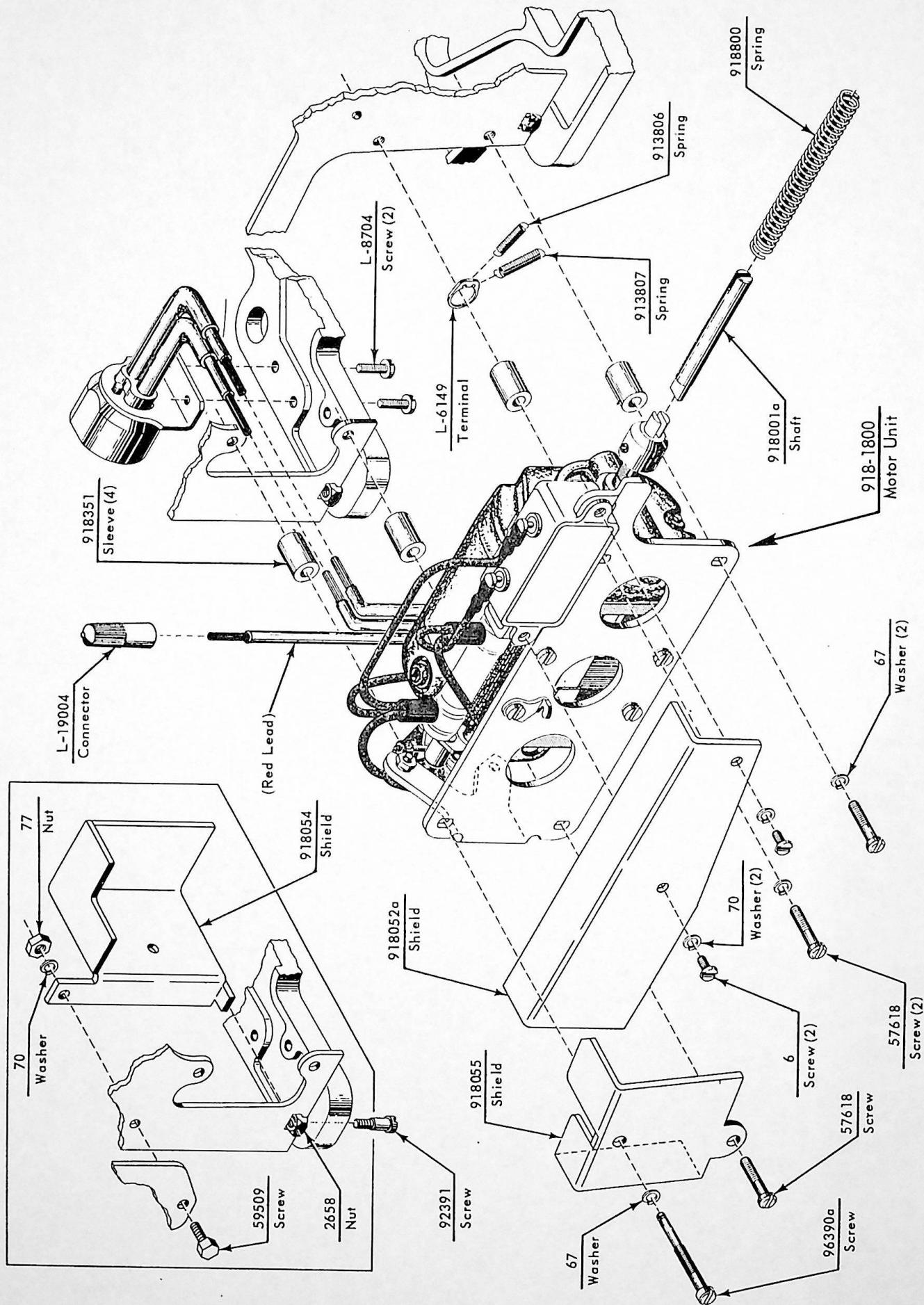
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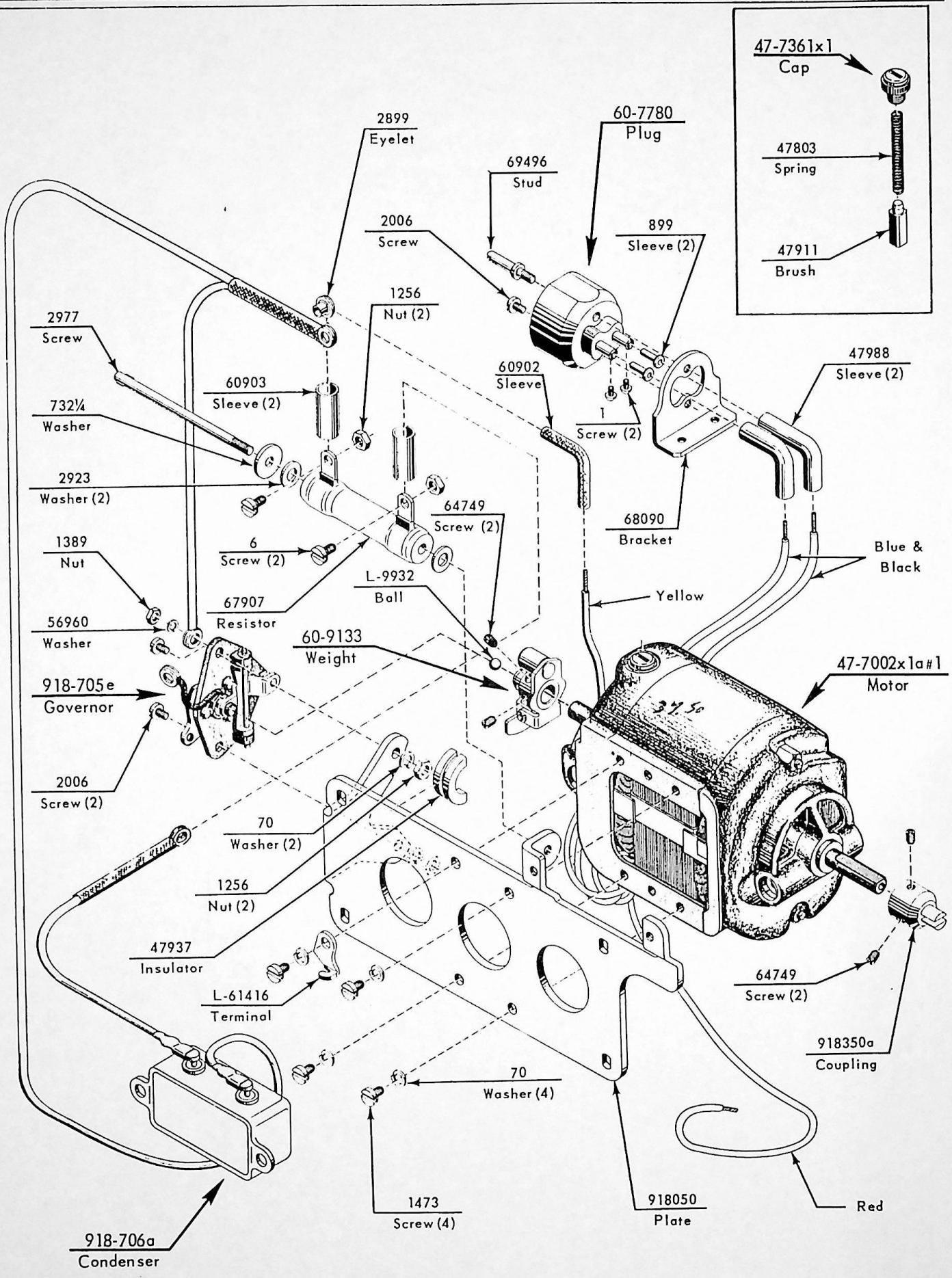
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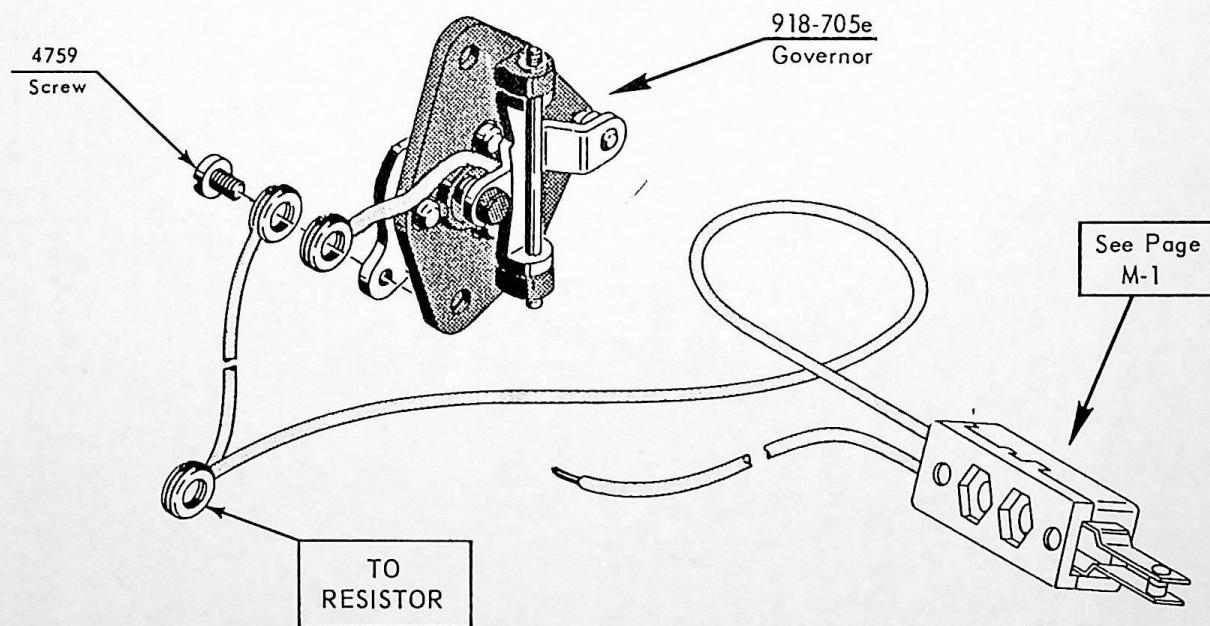
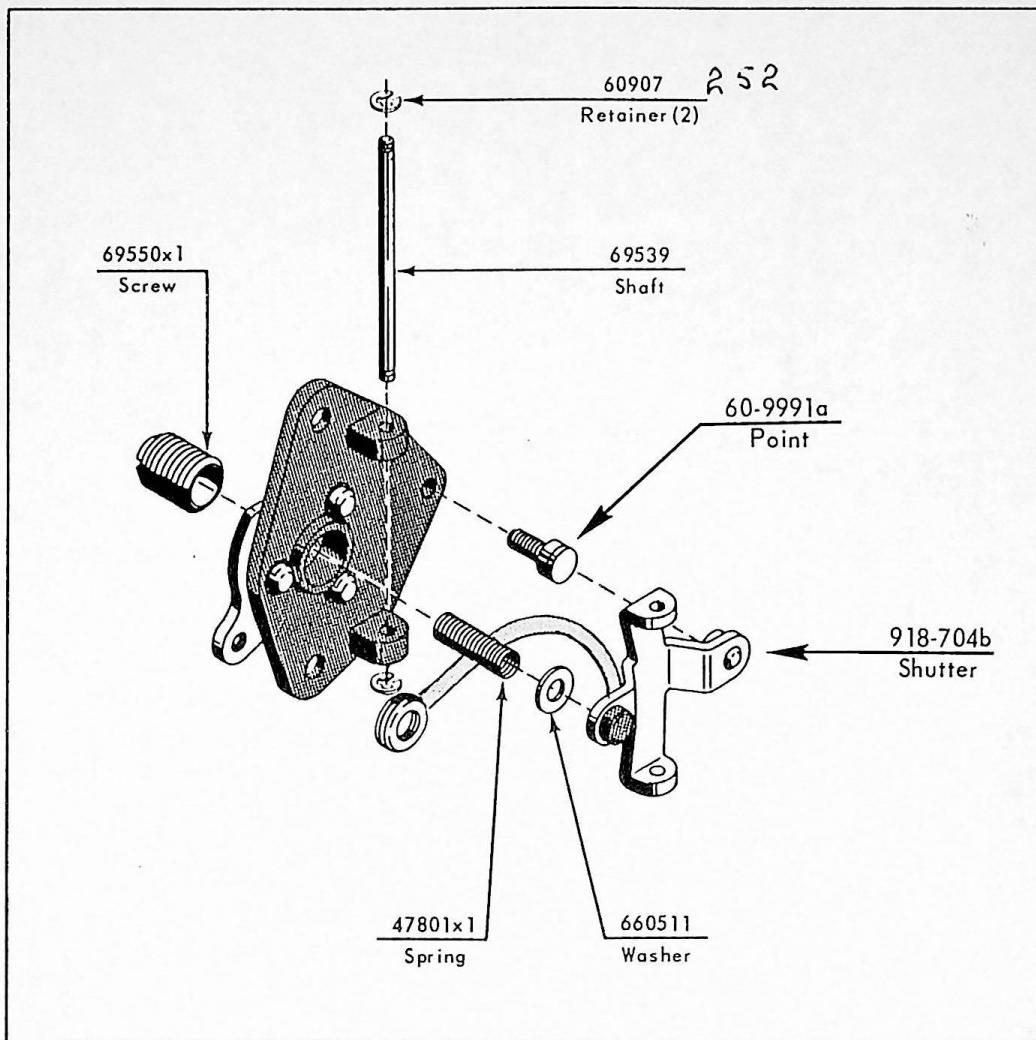
Dr 427

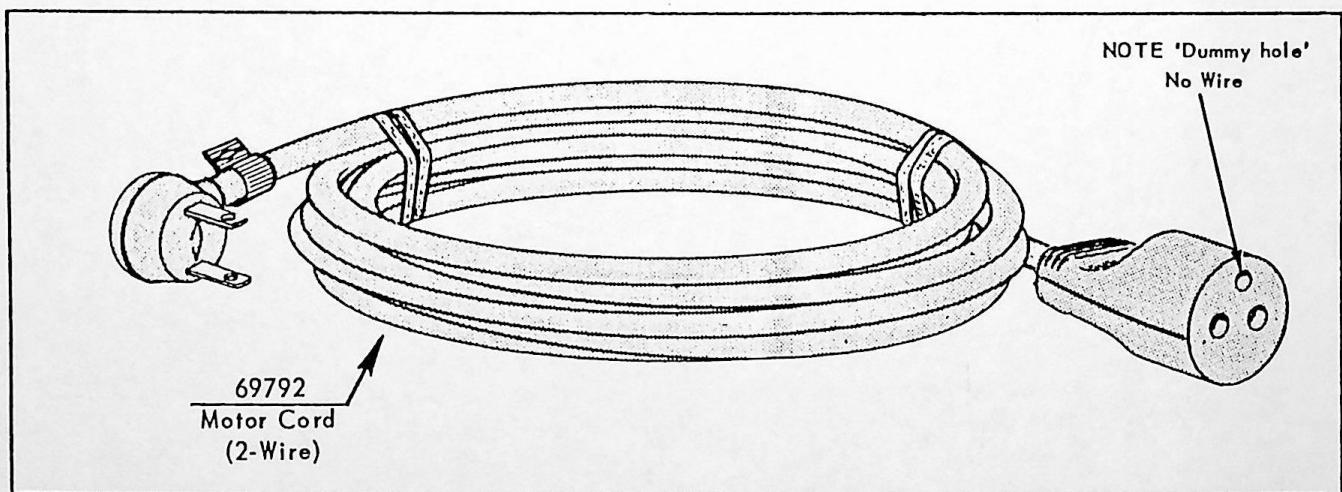
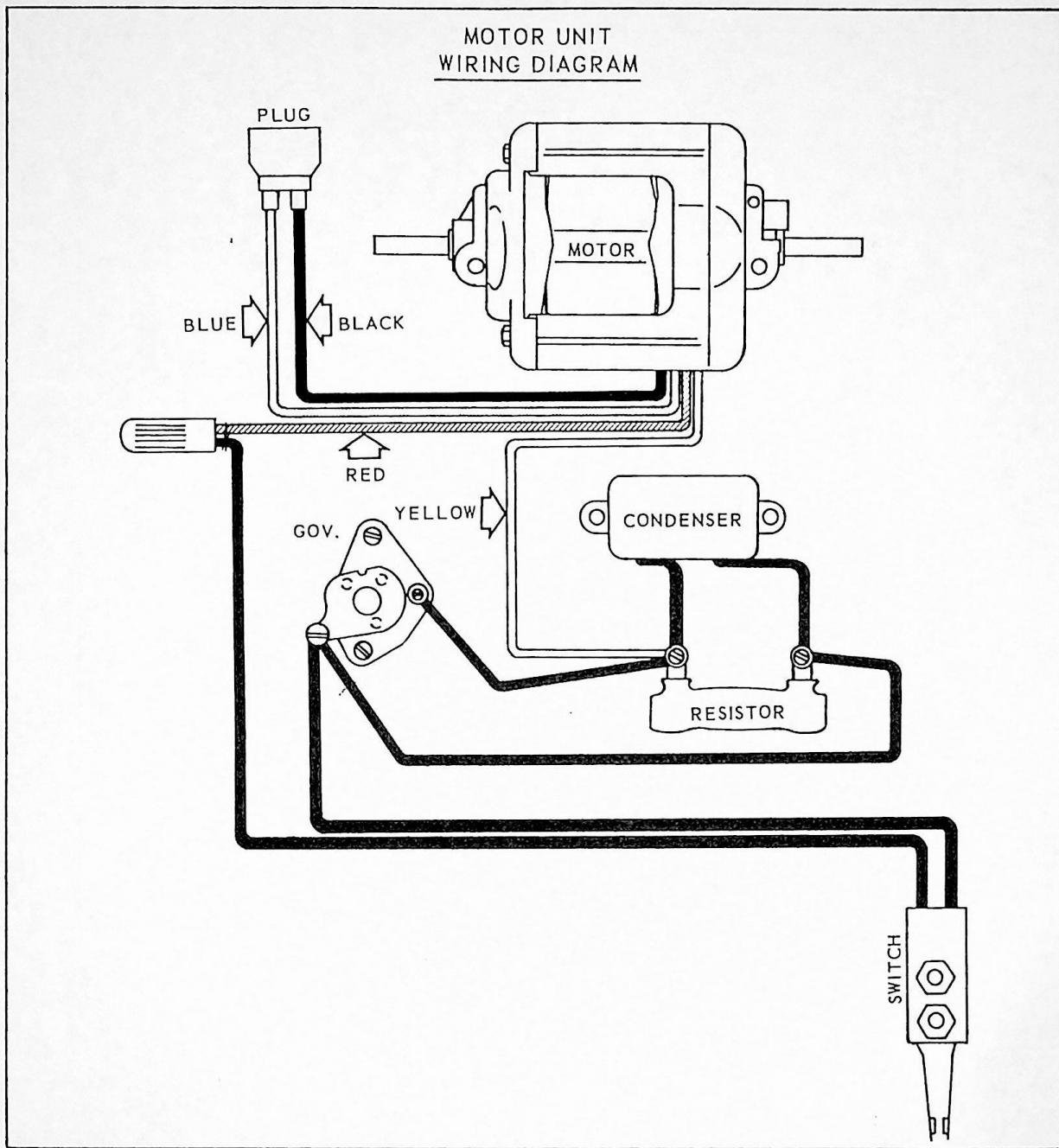
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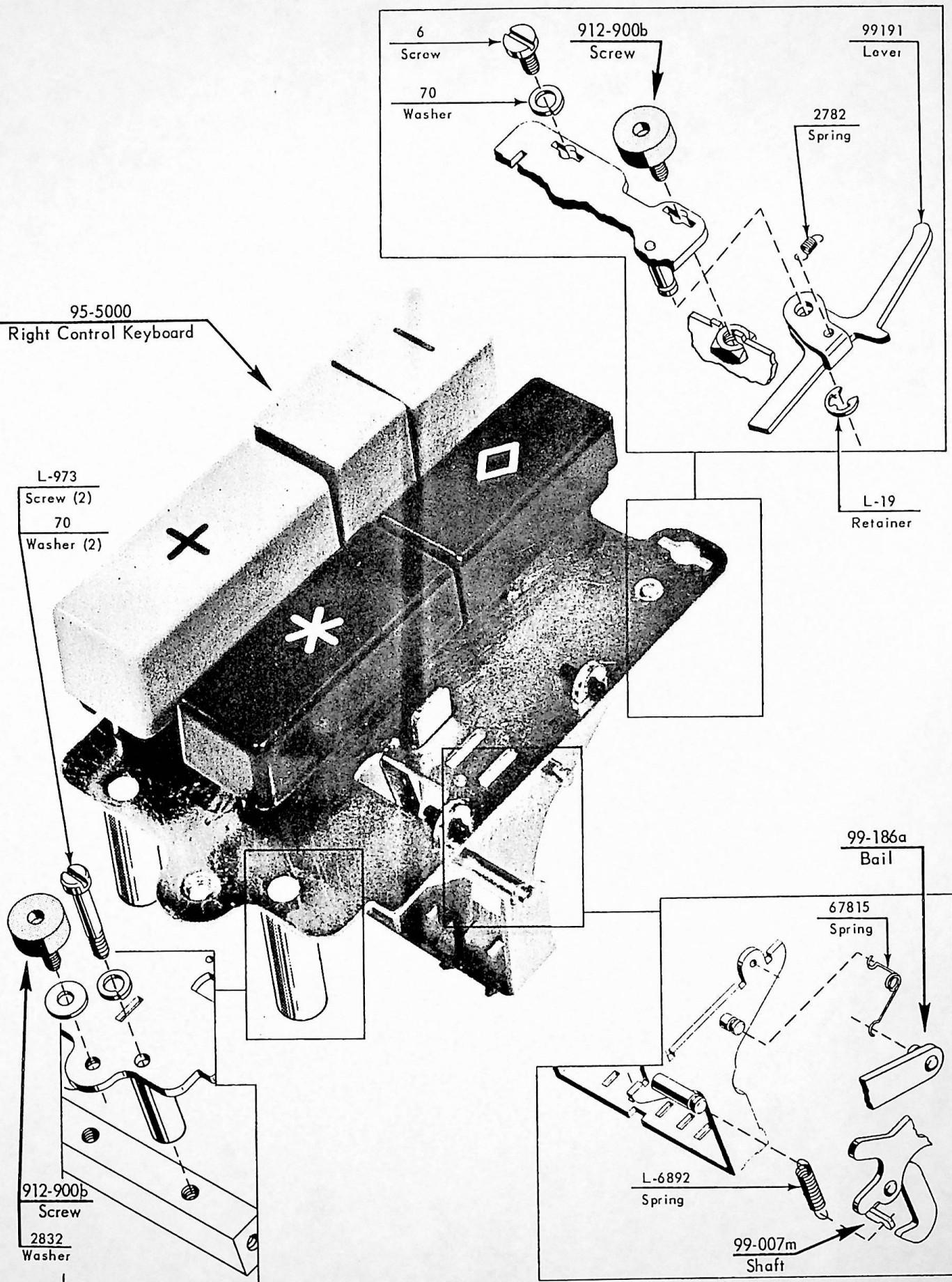


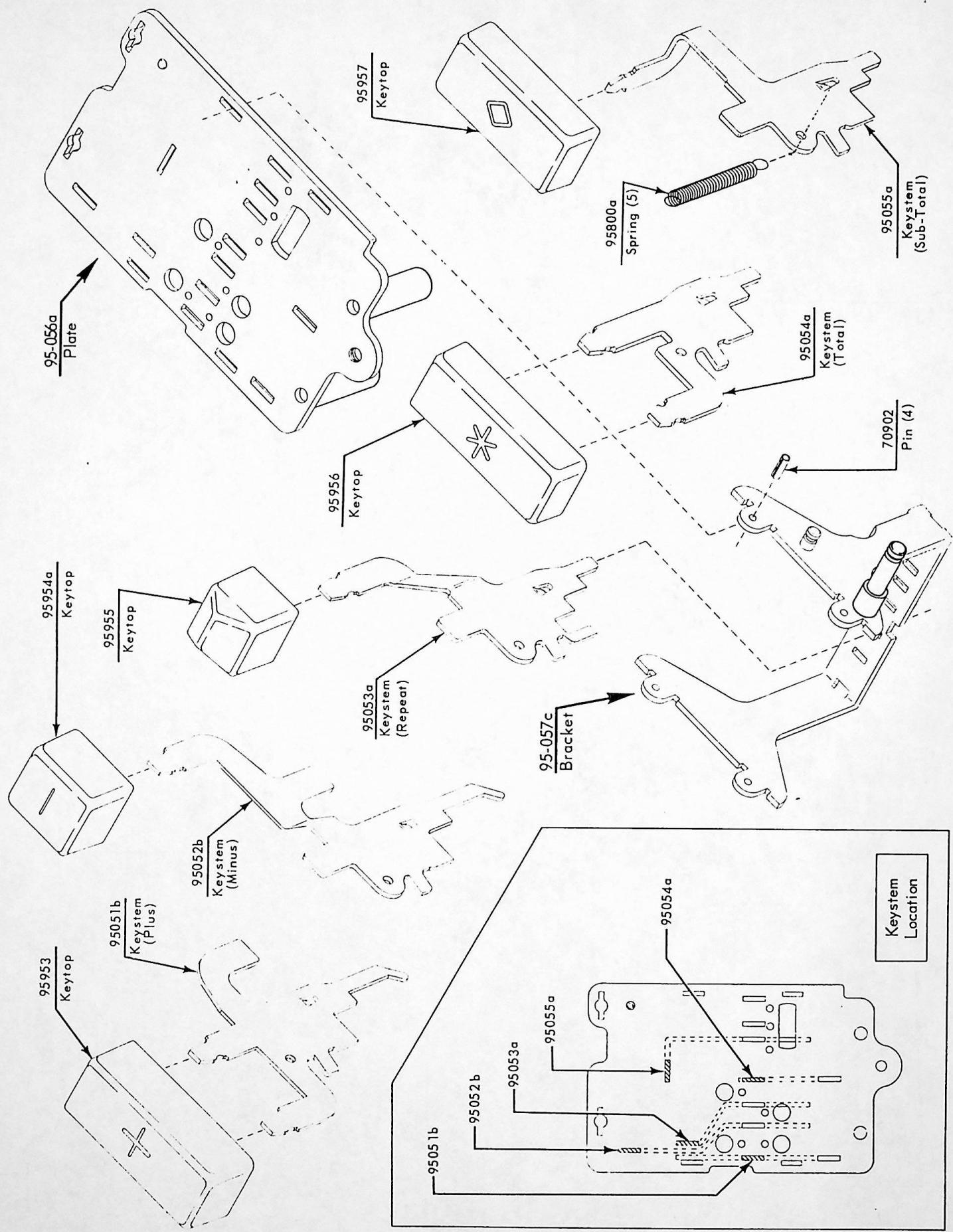




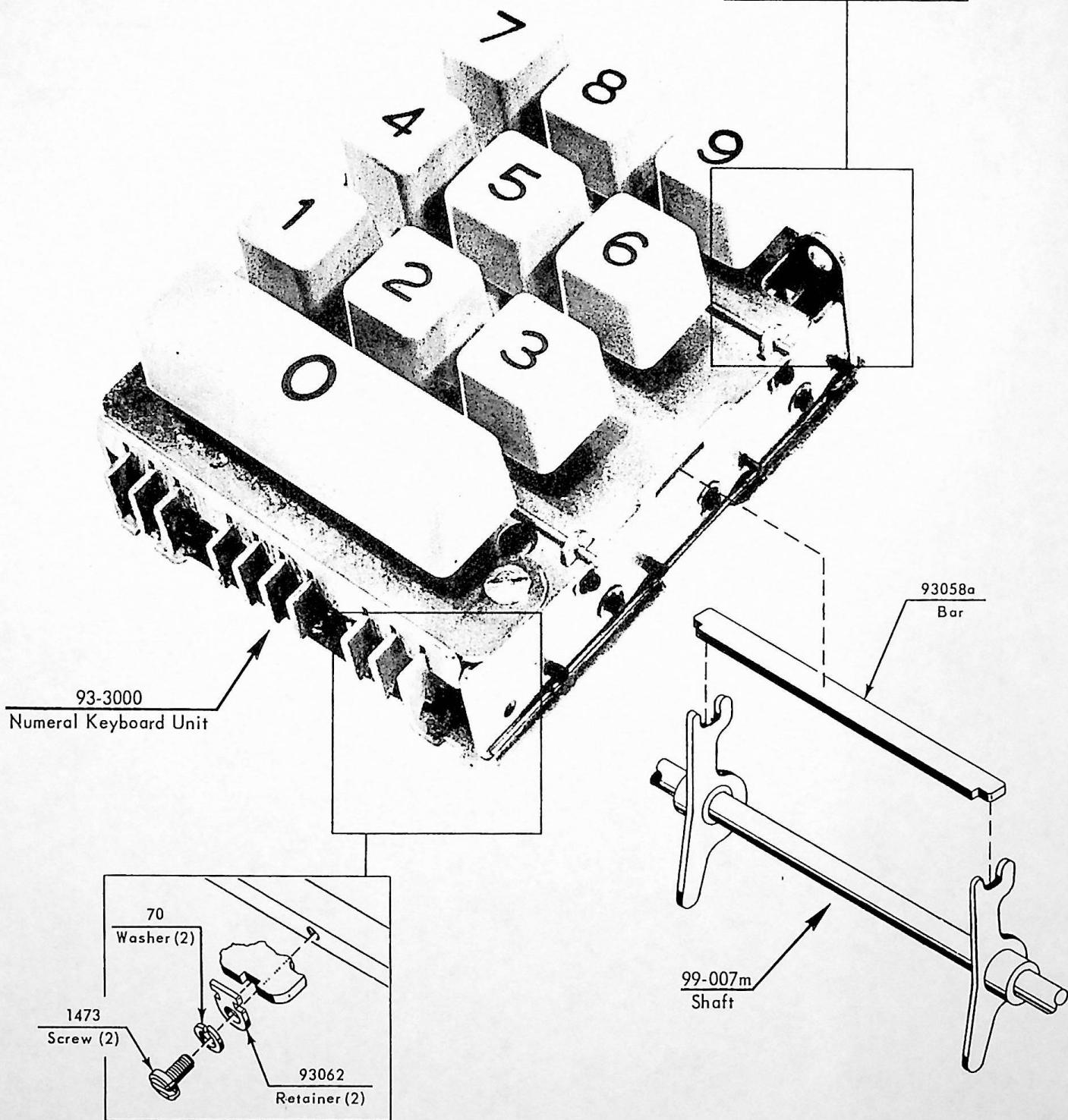
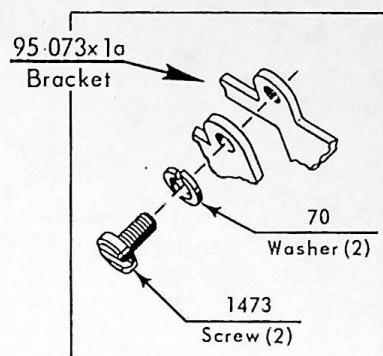


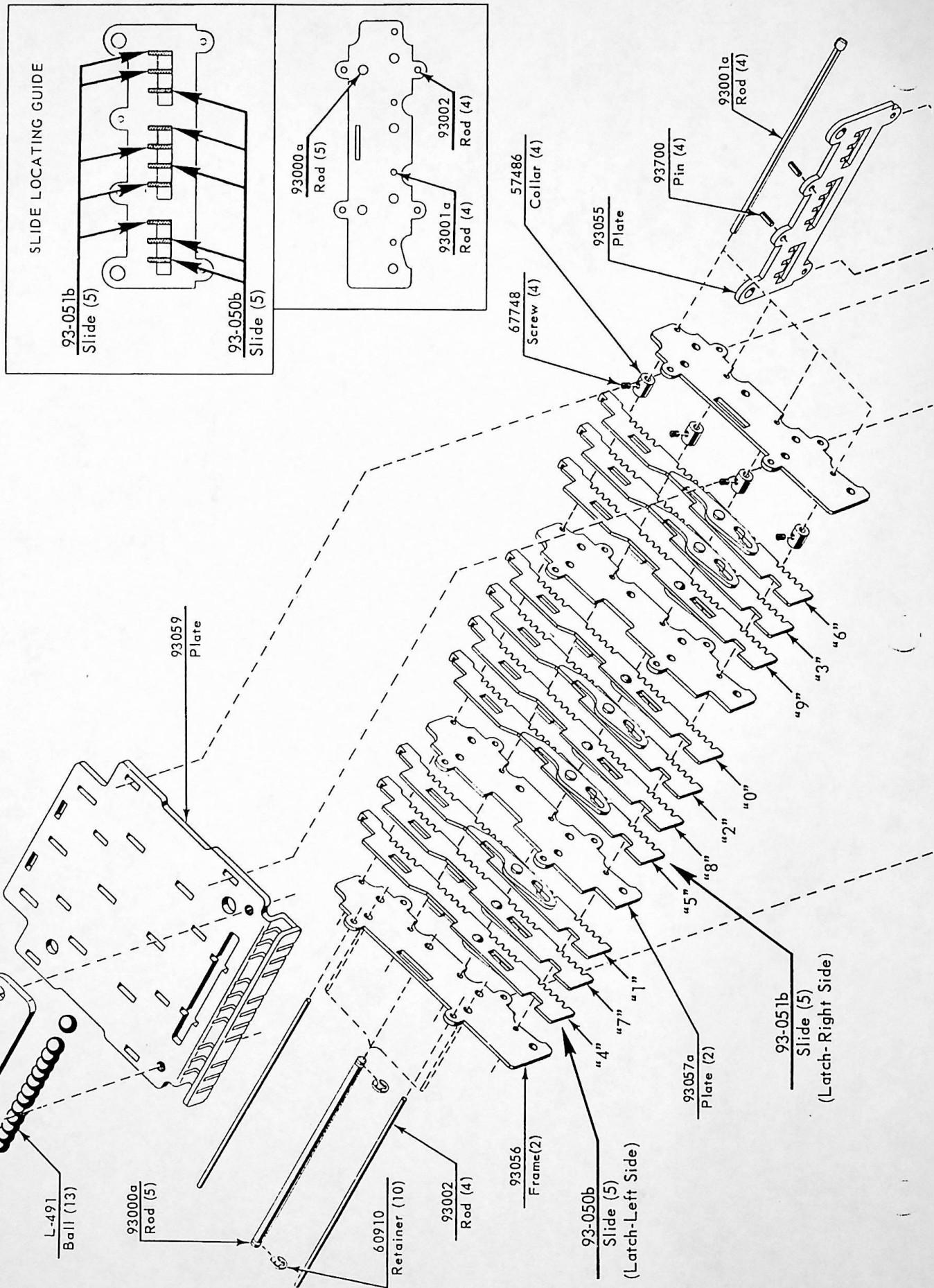


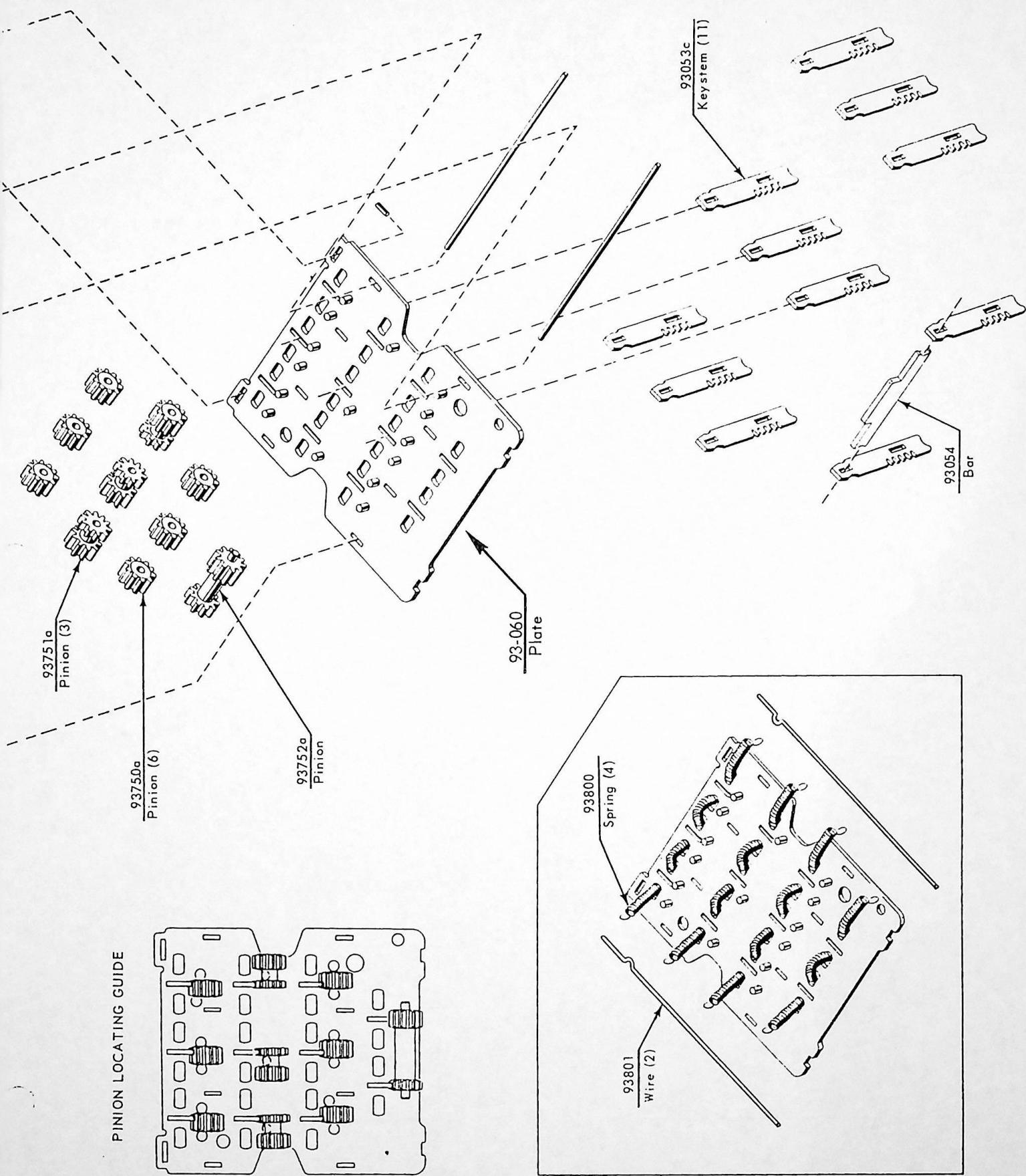


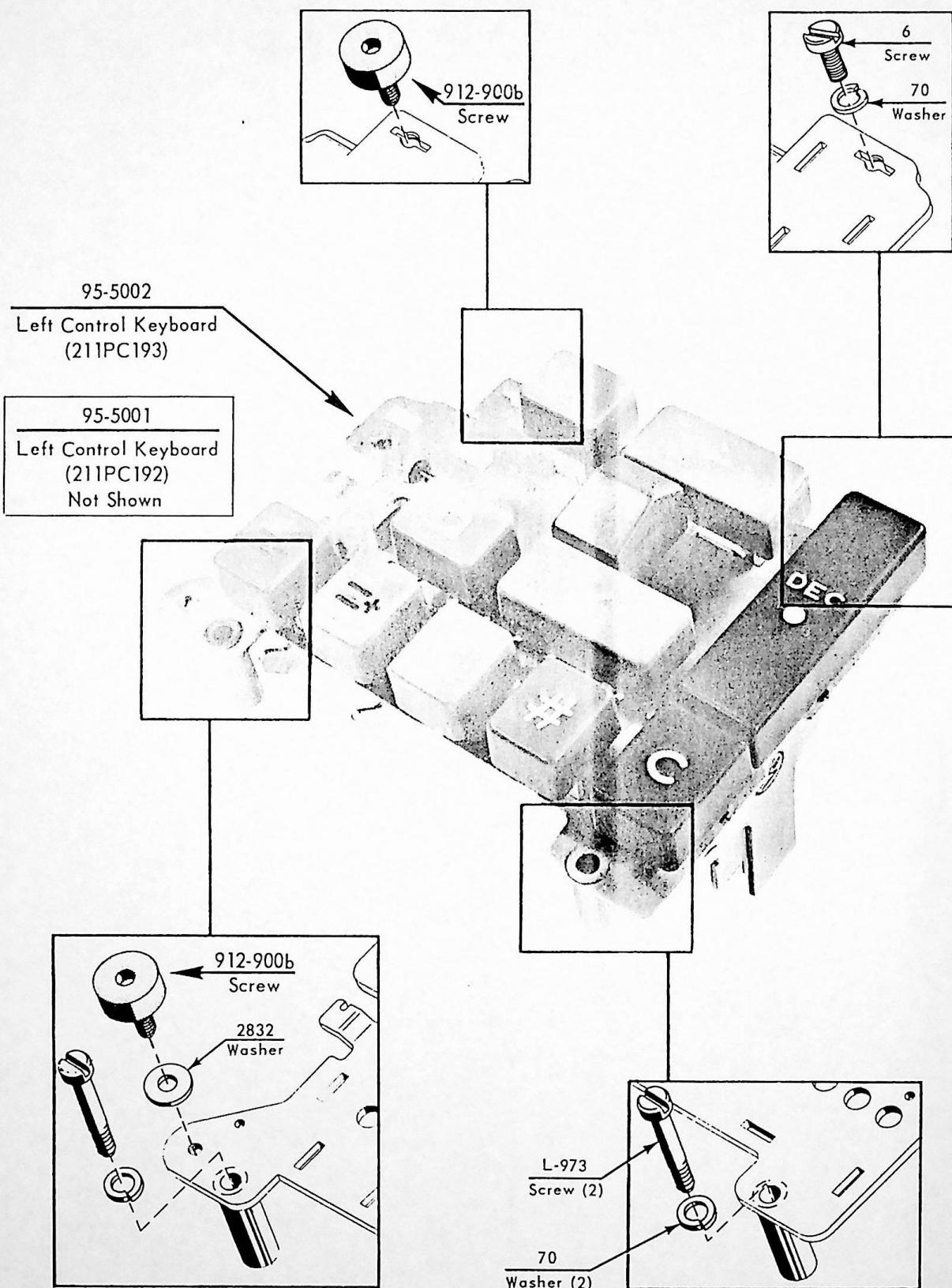


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# 1	93950	# 6	93950
# 2	93950	# 7	93950
# 3	93950	# 8	93950
# 4	93950	# 9	93950
# 5	93950	# 0	93951a

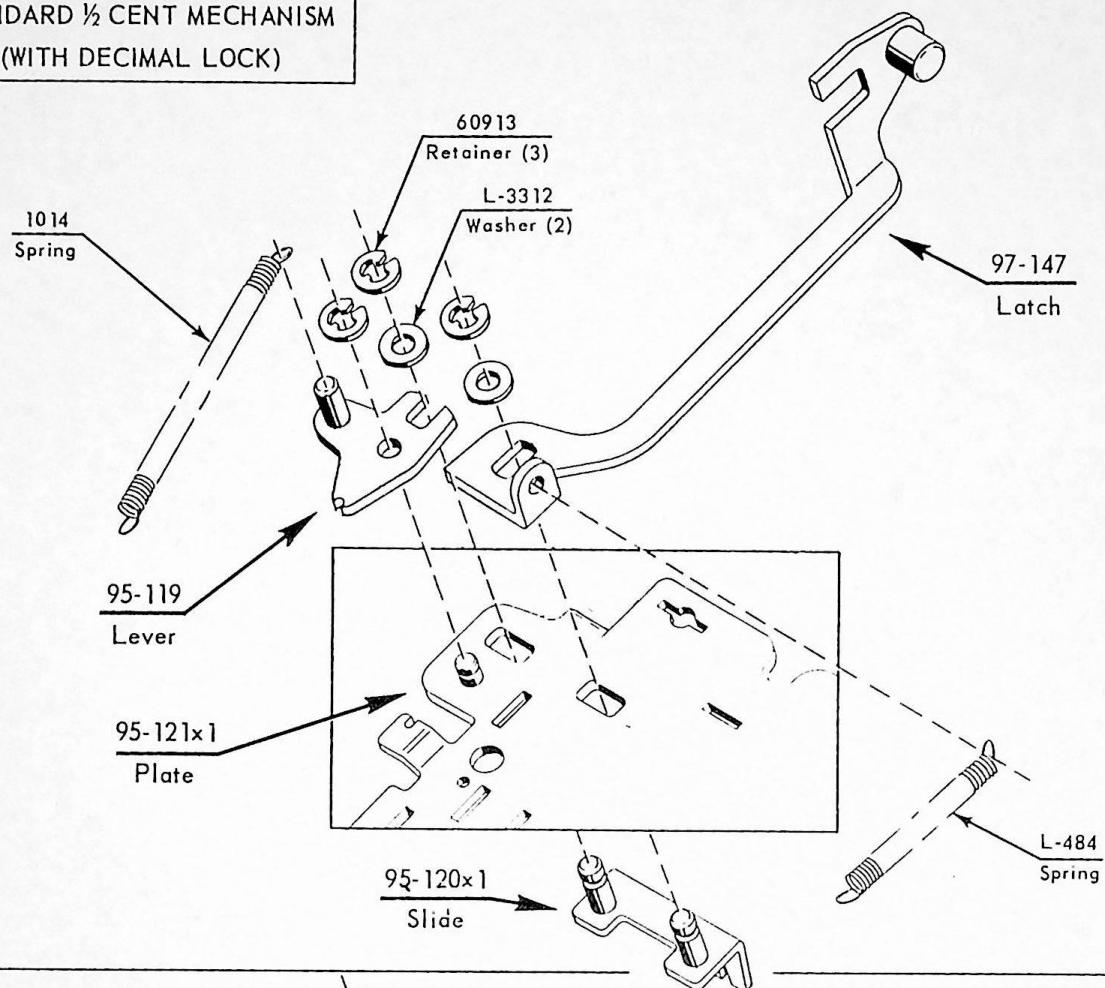


**NUMERAL KEYBOARD**

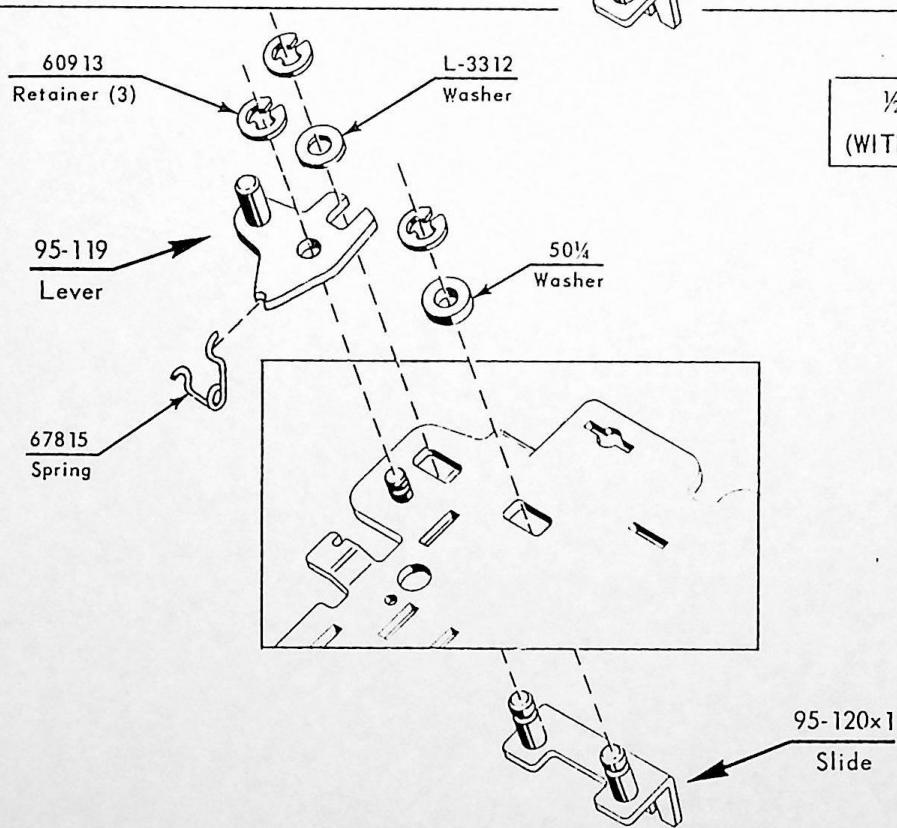


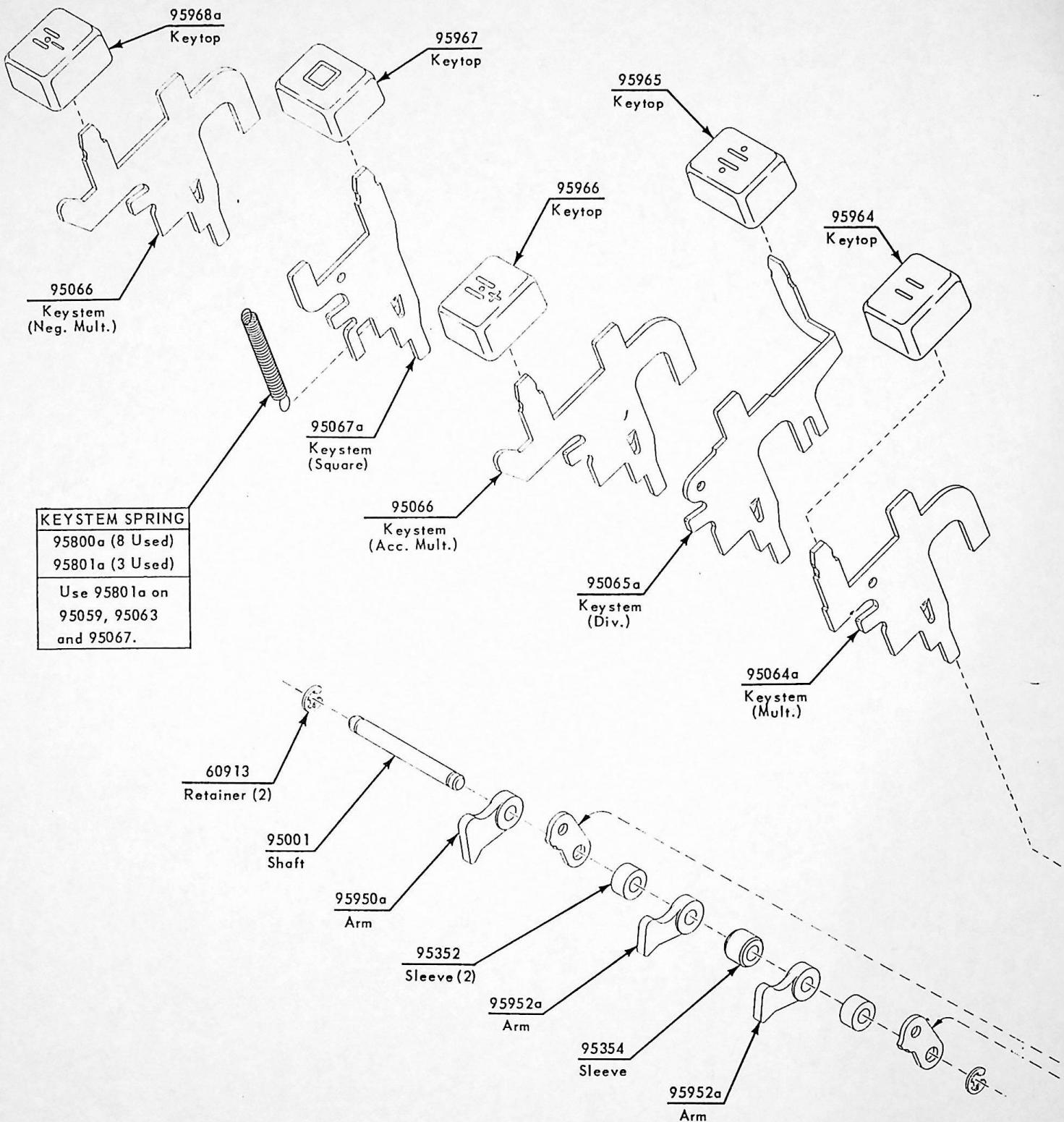


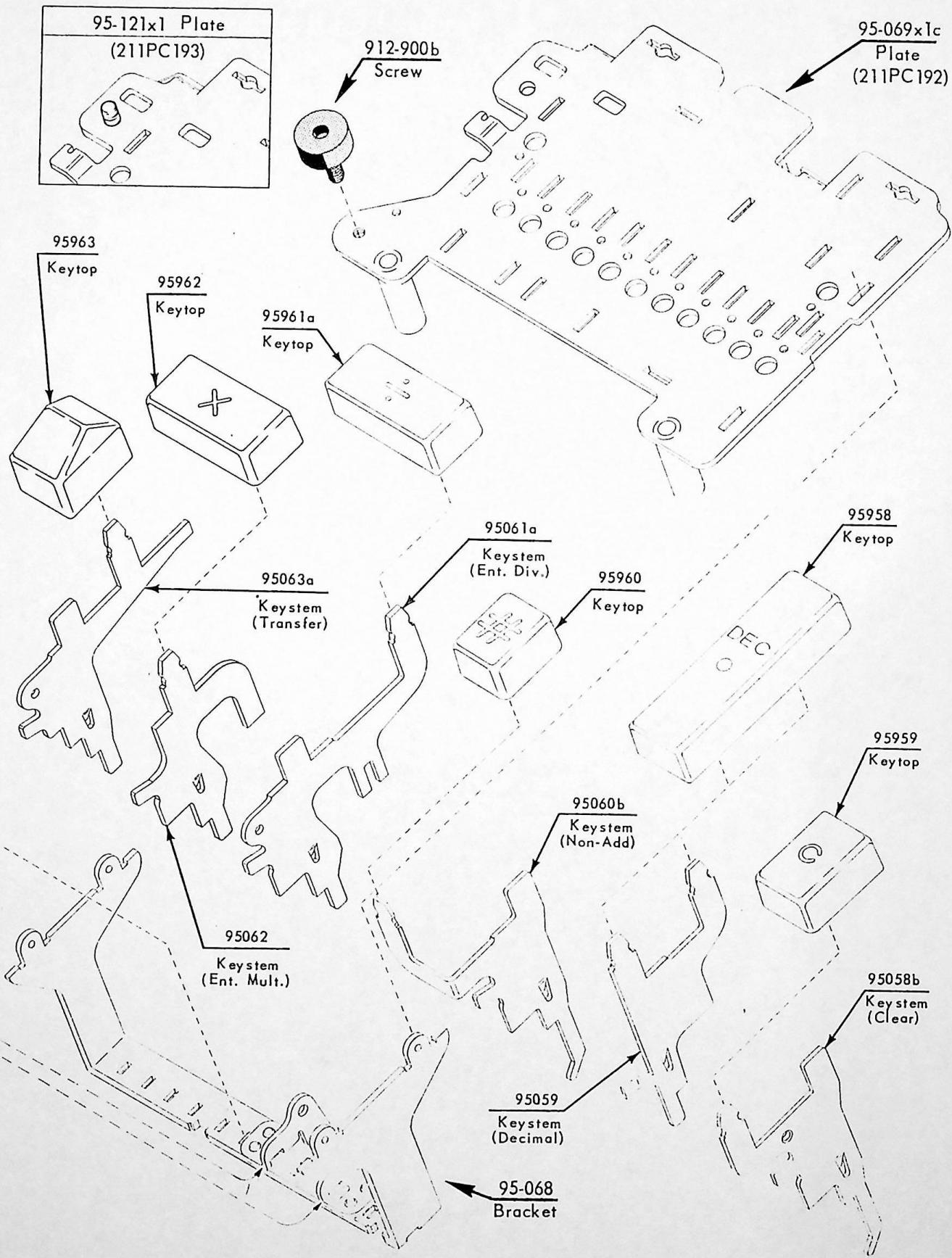
**STANDARD  $\frac{1}{2}$  CENT MECHANISM  
(WITH DECIMAL LOCK)**

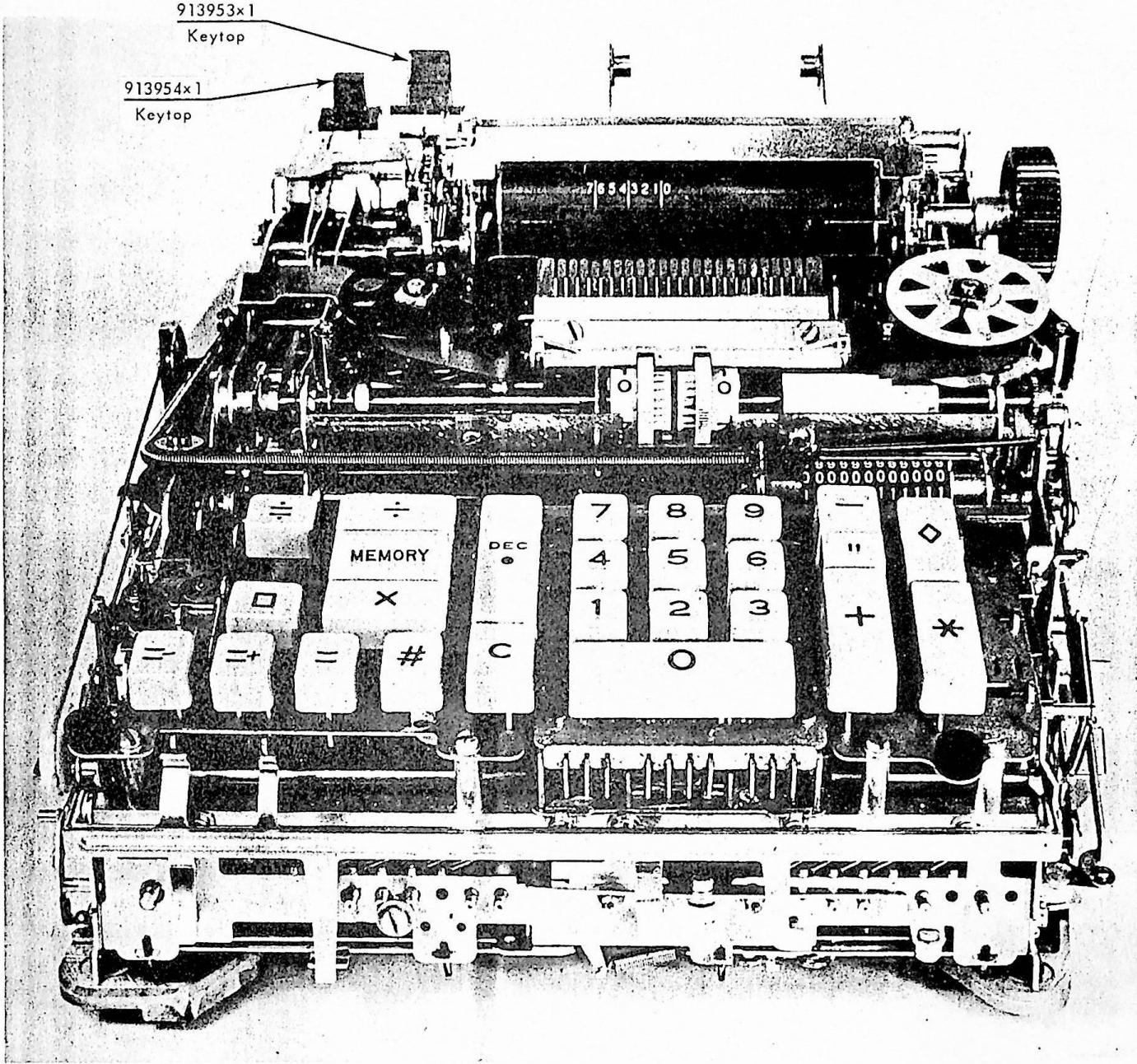


**$\frac{1}{2}$  CENT MECHANISM  
(WITHOUT DECIMAL LOCK)**







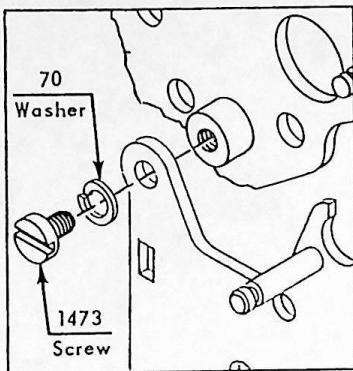


## 580 MODEL KEYTOP IDENTIFICATION

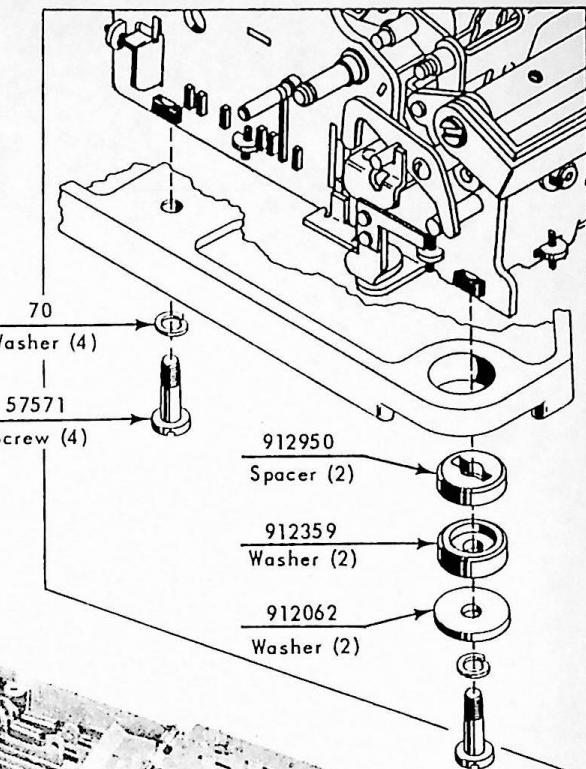
LEFT CONTROL KEYBOARD	
=	95968x1
÷	95965x1
□	95967x1
=+	95966x1
÷	95961x1
M	959500x1
X	95962x1
=	95964x1
#	95960x1
D	95958x1
C	95959x1

NUMERAL KEYTOPS			
#1	93950x1	#6	93950x1
#2	93950x1	#7	93950x1
#3	93950x1	#8	93950x1
#4	93950x1	#9	93950x1
#5	93950x1	#0	93951x1

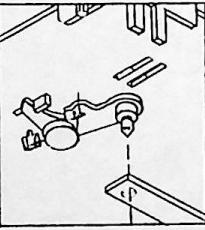
RIGHT CONTROL KEYBOARD	
-	95954x1
II	95955x1
+	95953x1
◊	95957x1
†	95956x1



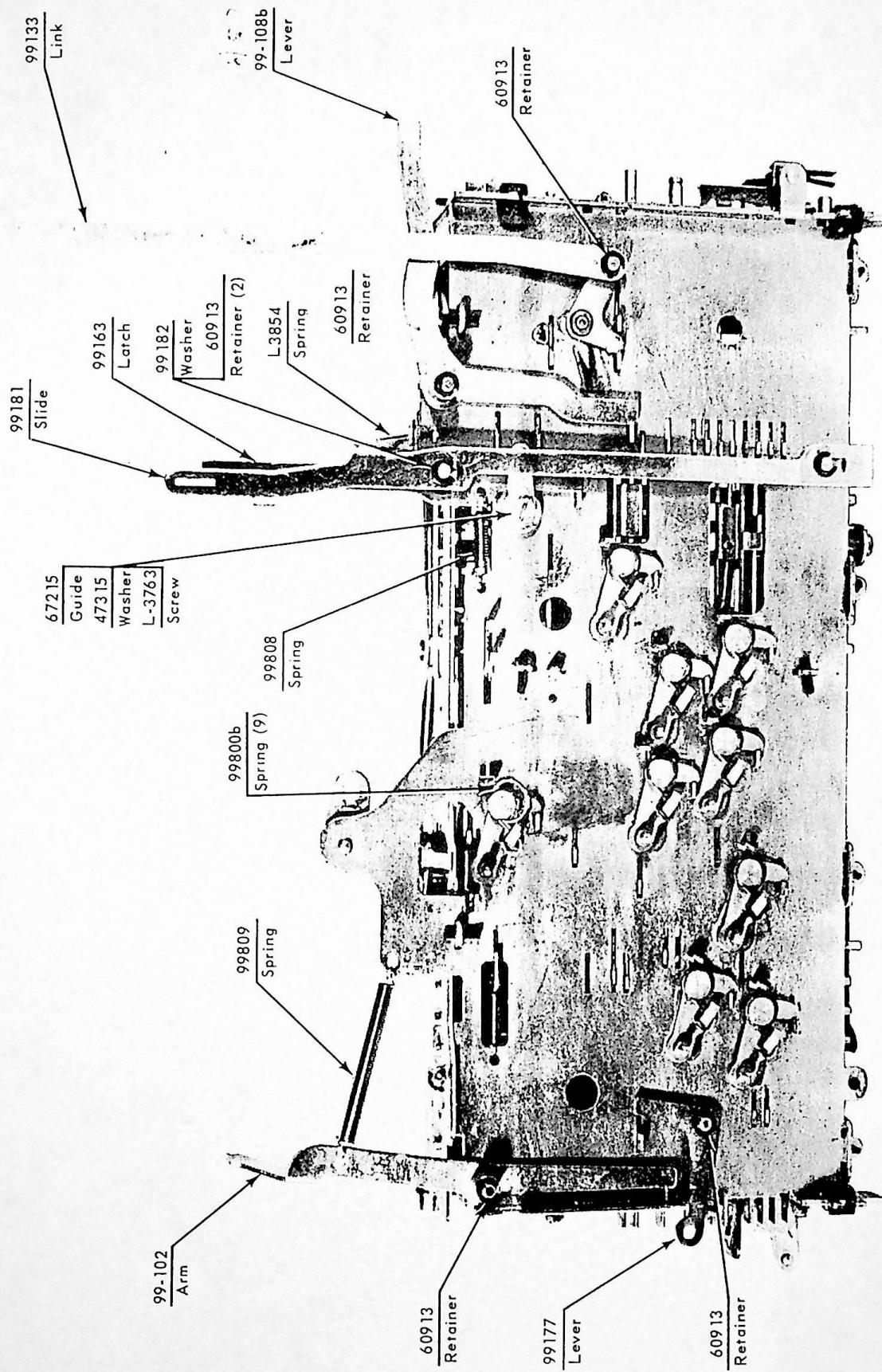
99-9000  
Program Unit  
(211PC192)

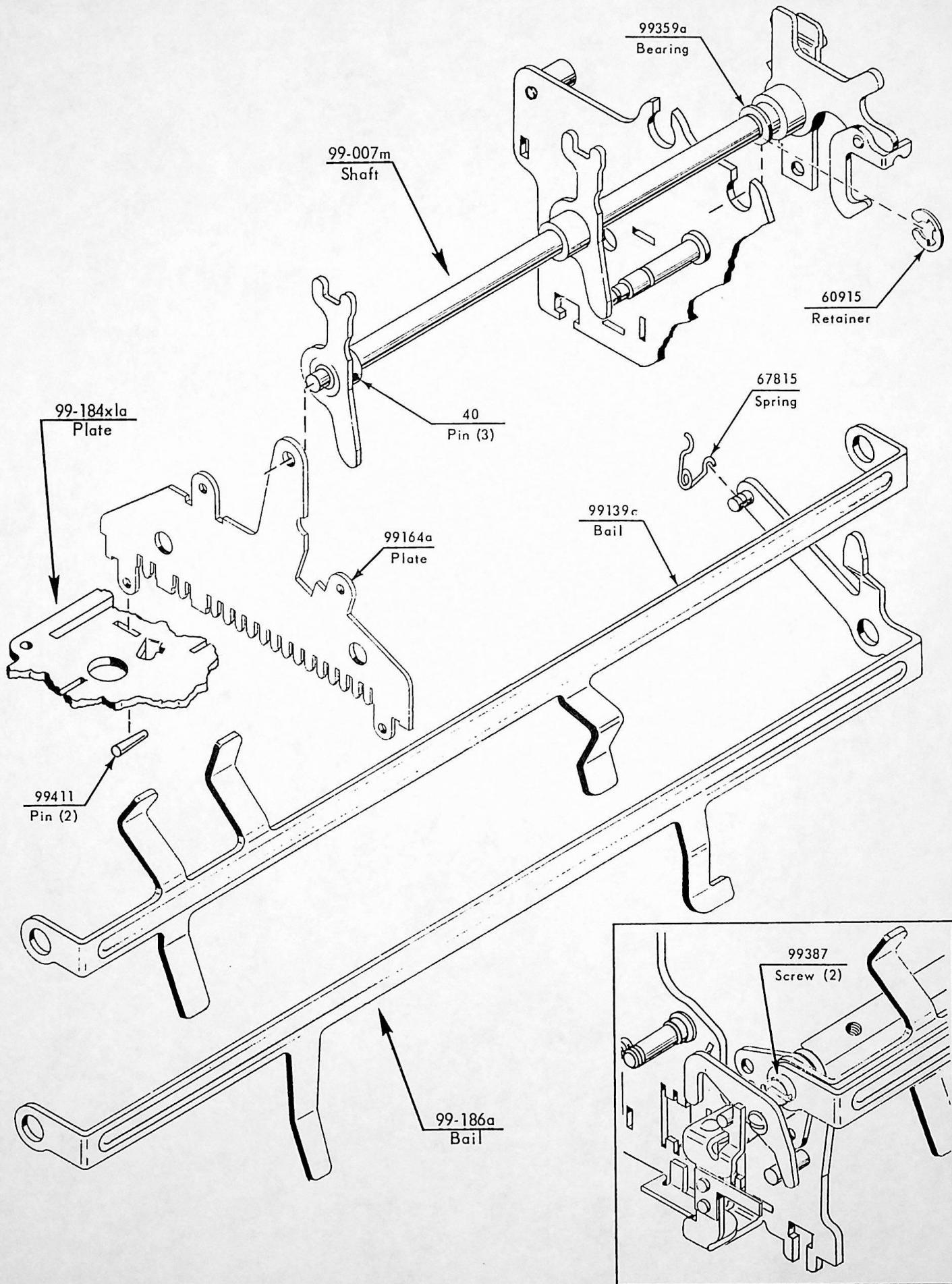


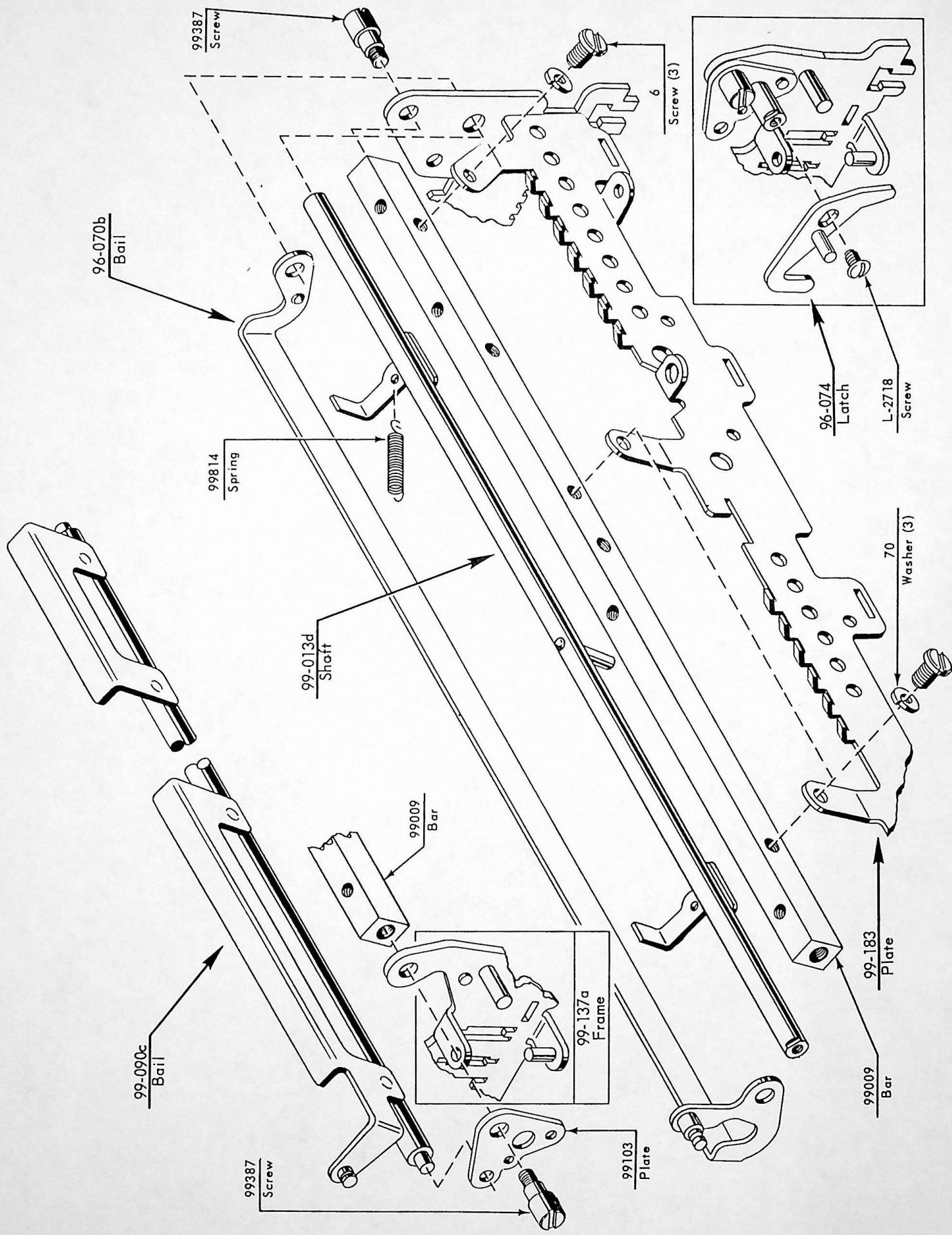
99-9002  
Program Unit  
(211PC193)

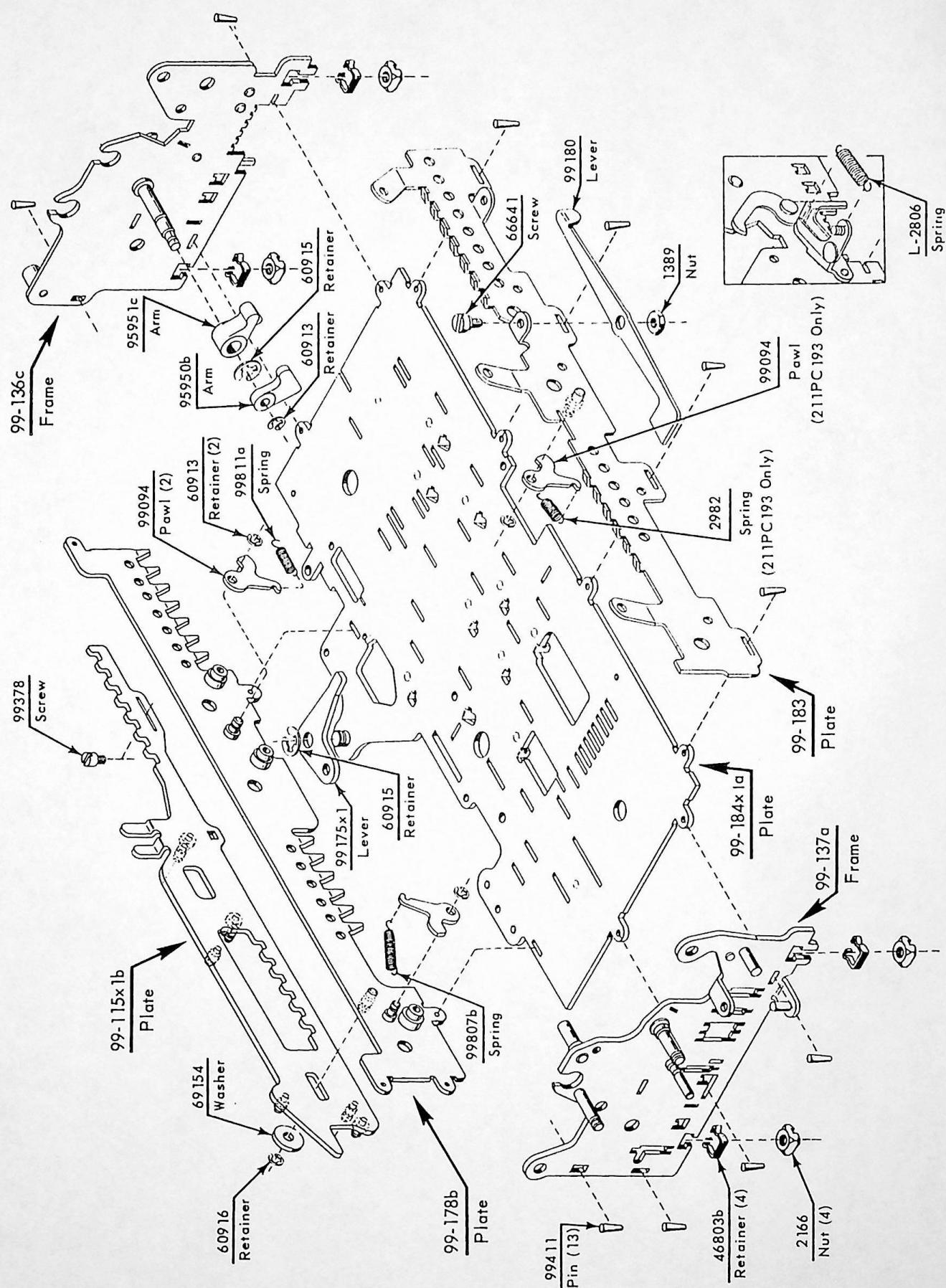


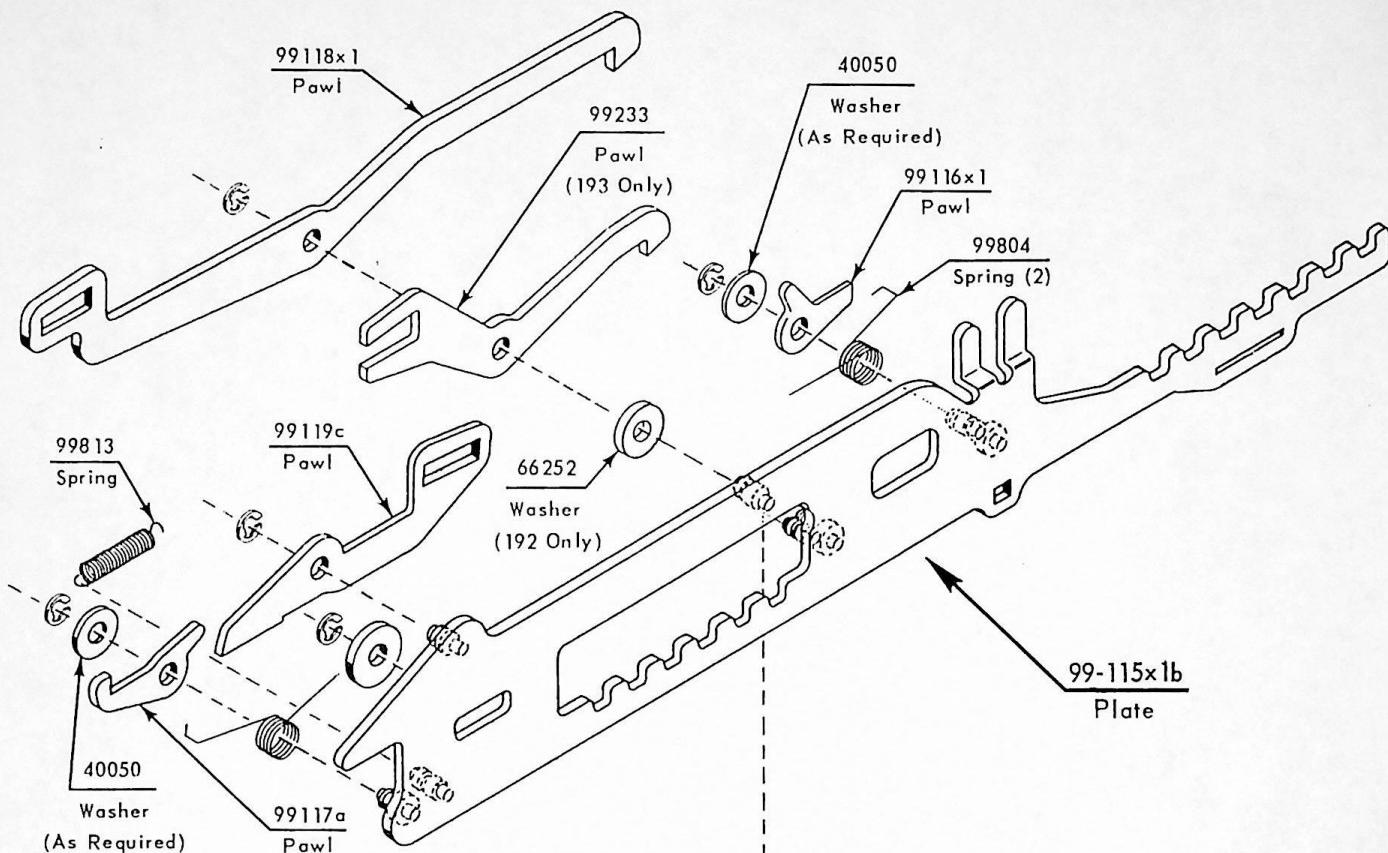
Align Pins of Program Unit  
Bellcranks with Holes in  
Base Slides when Assembling  
these two units.



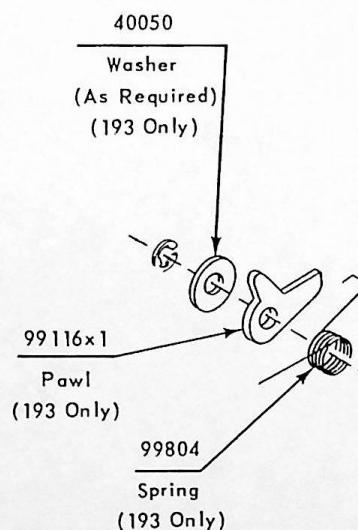


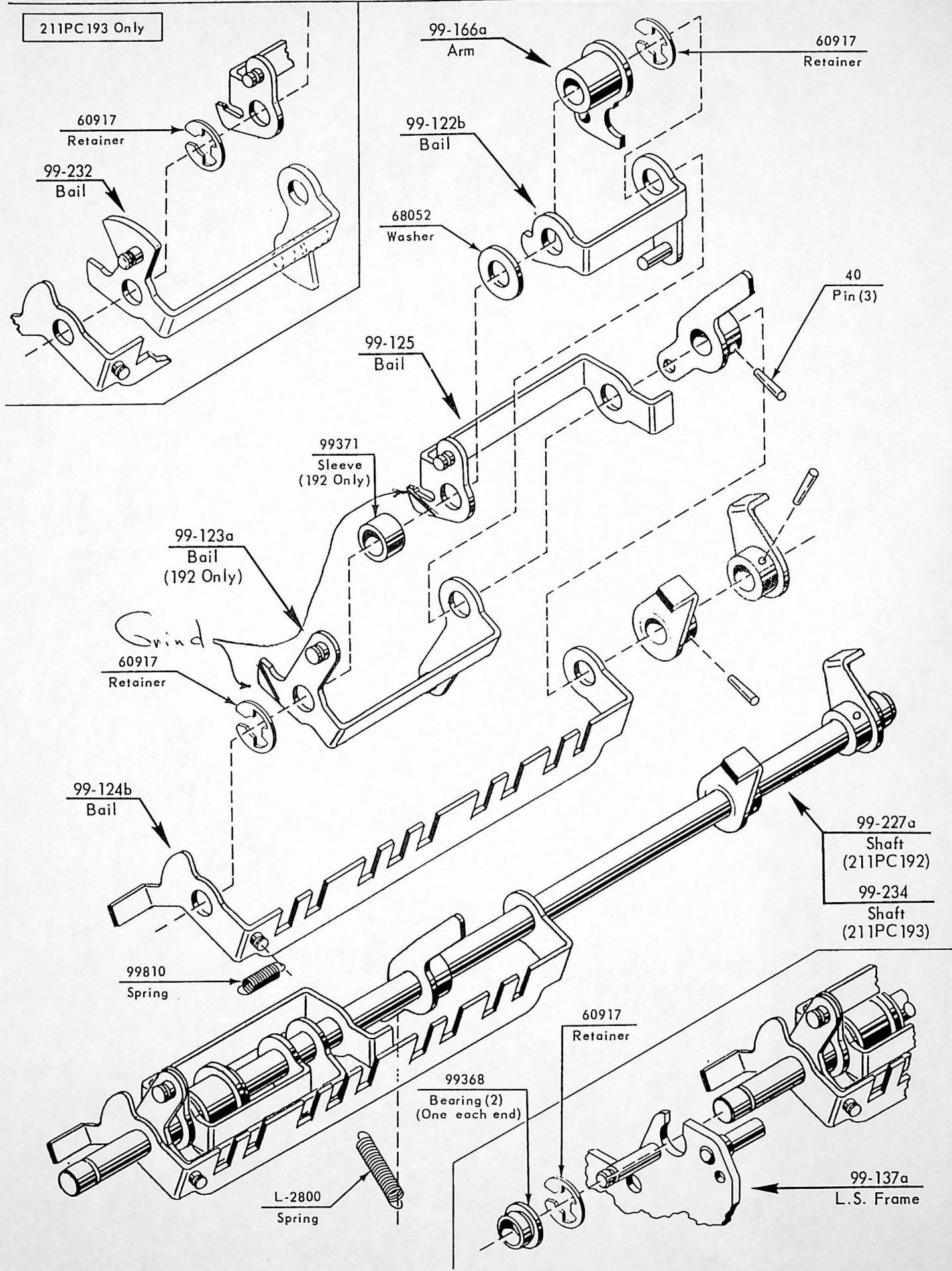


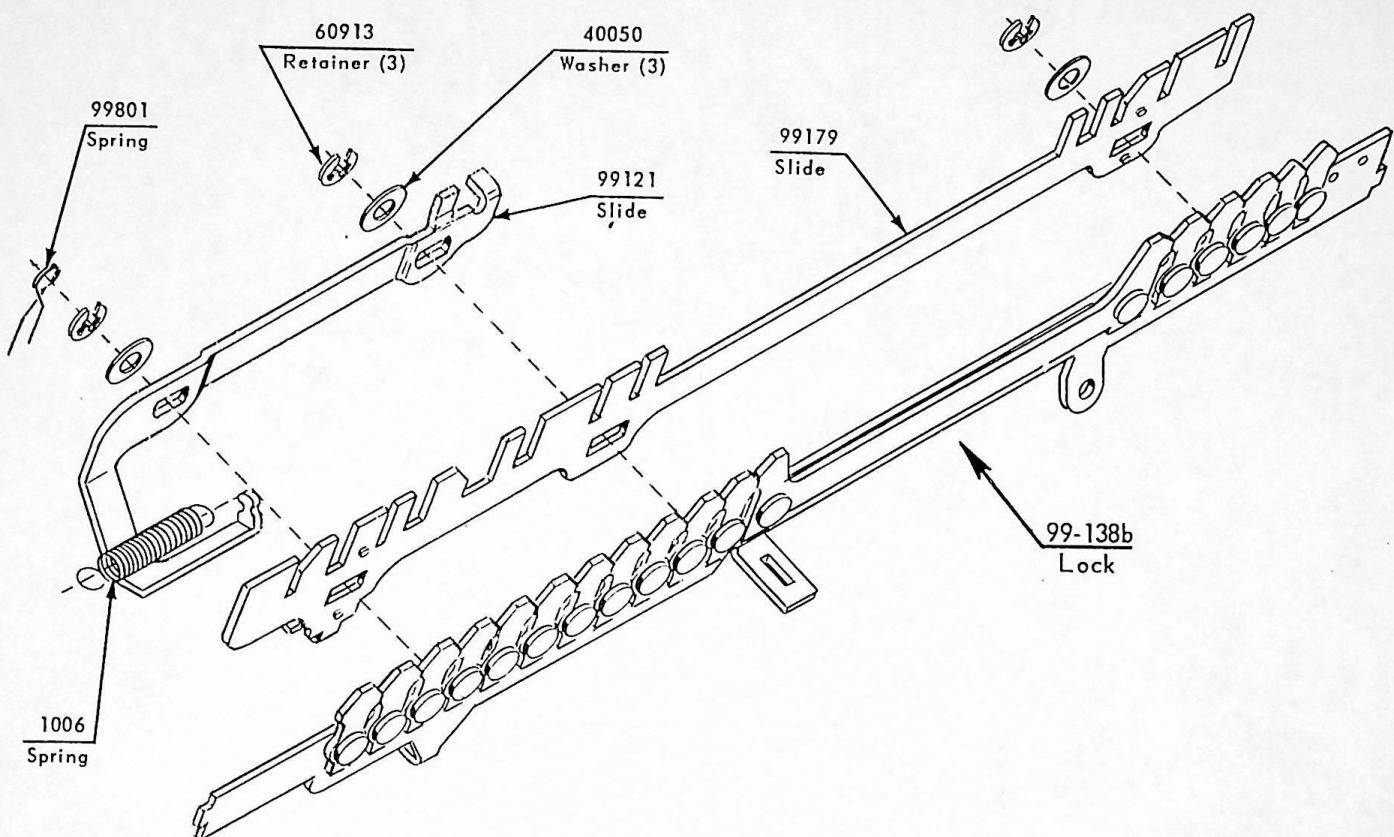




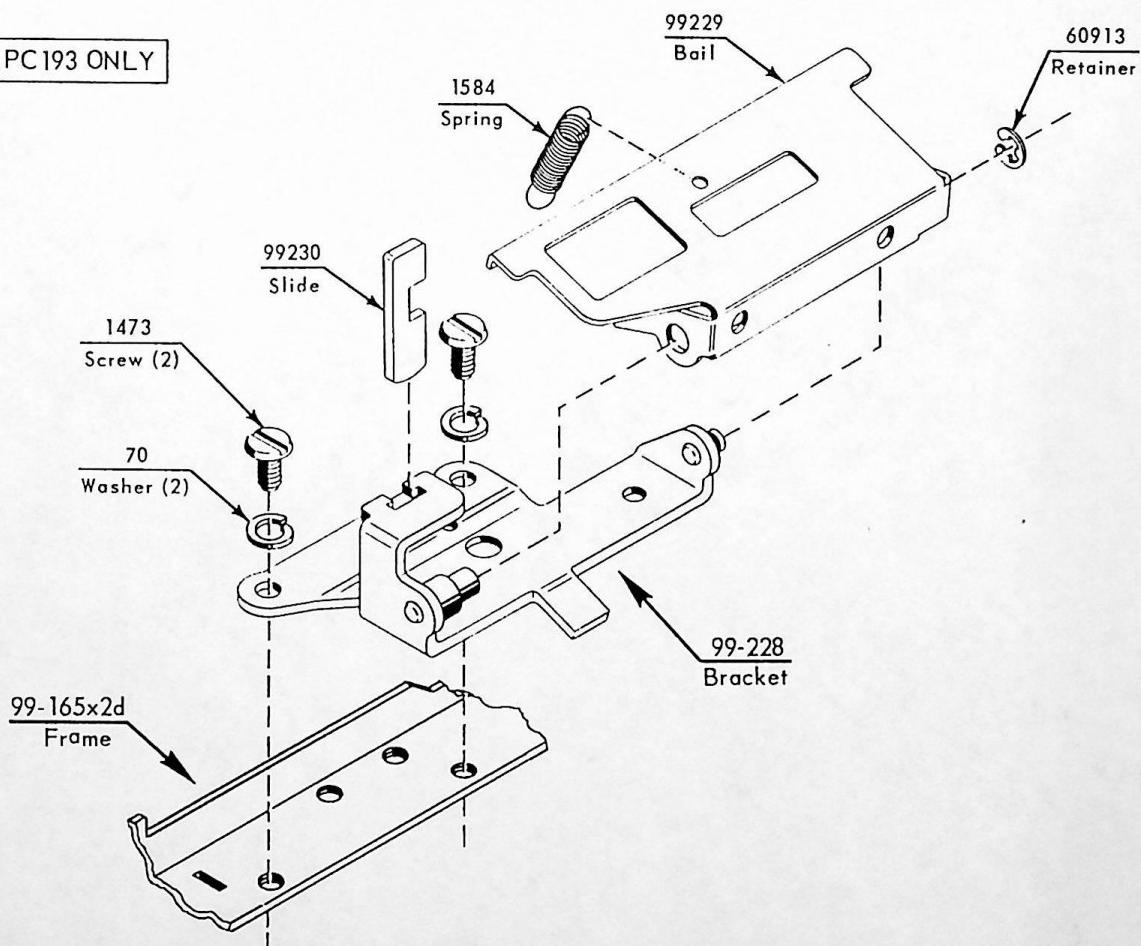
ALL RETAINERS  
ARE 60916

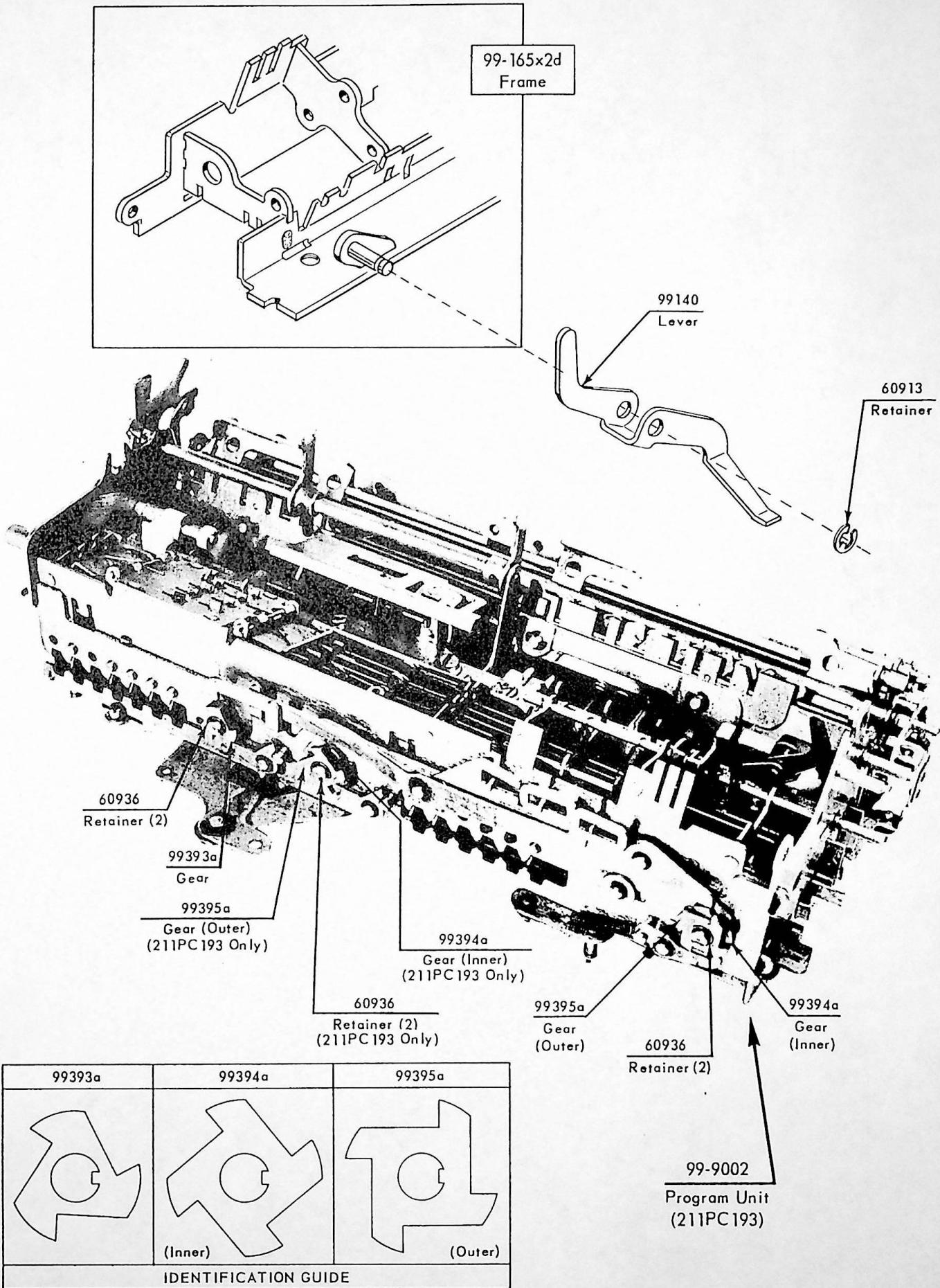


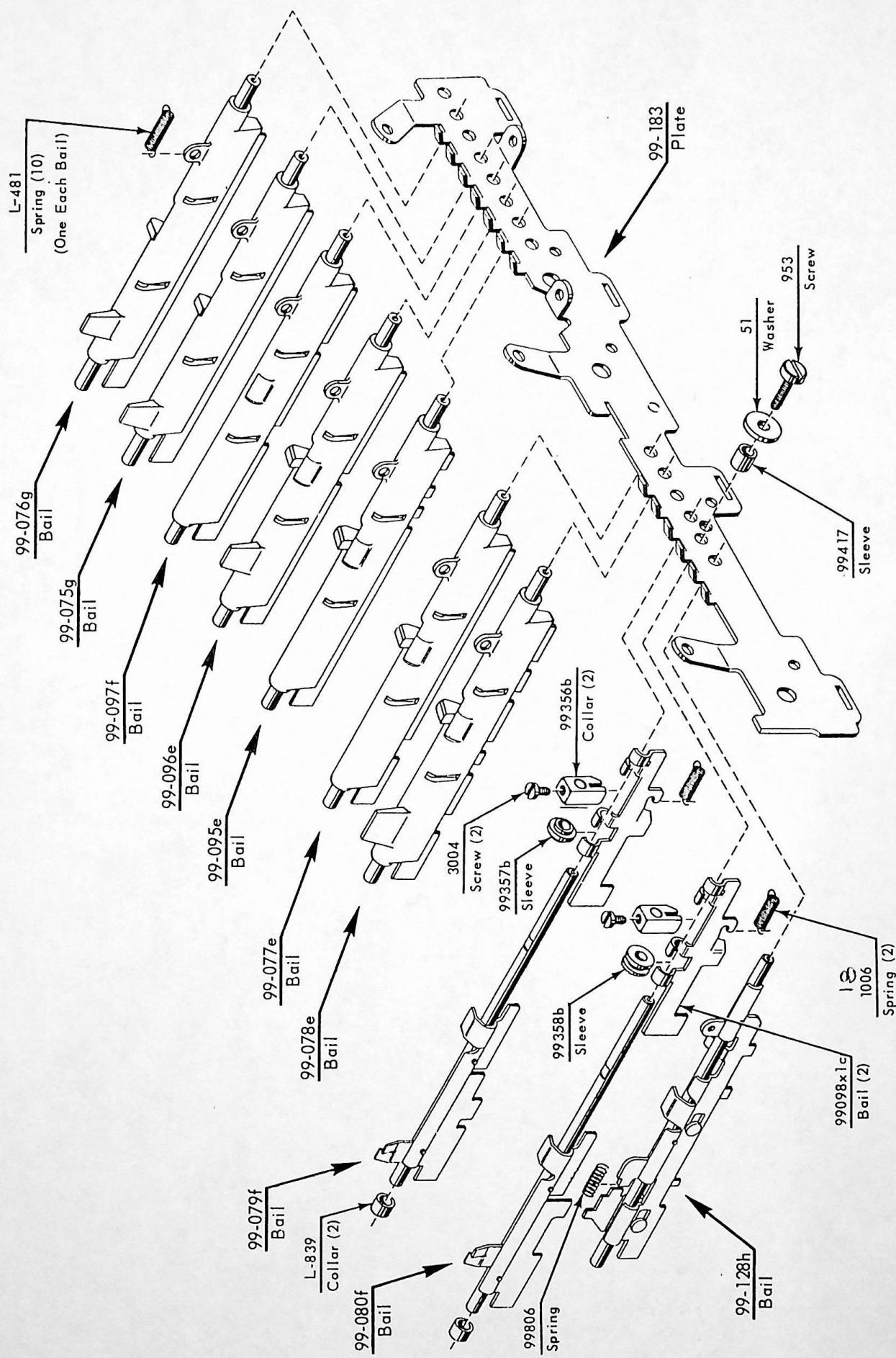


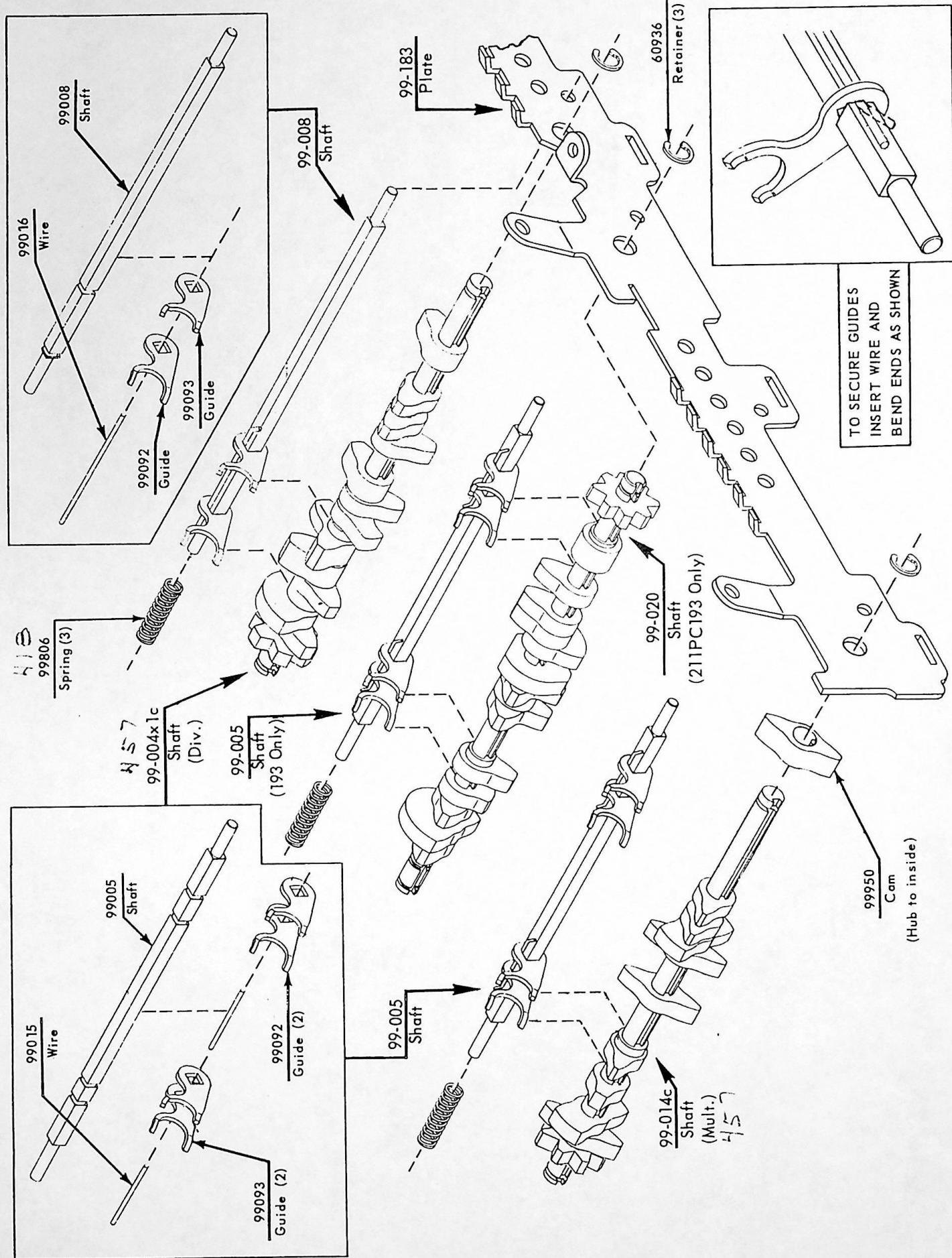


211PC193 ONLY

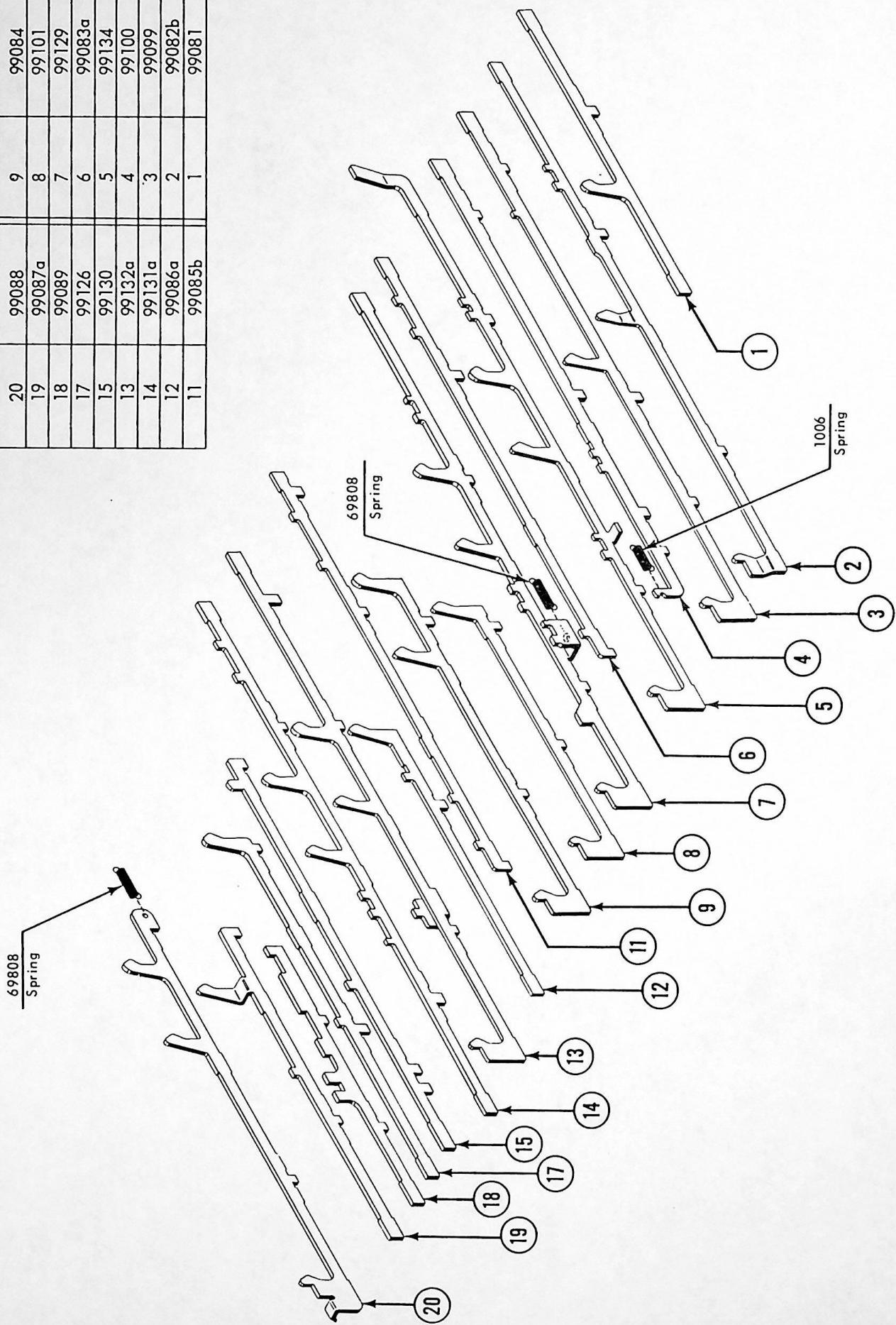


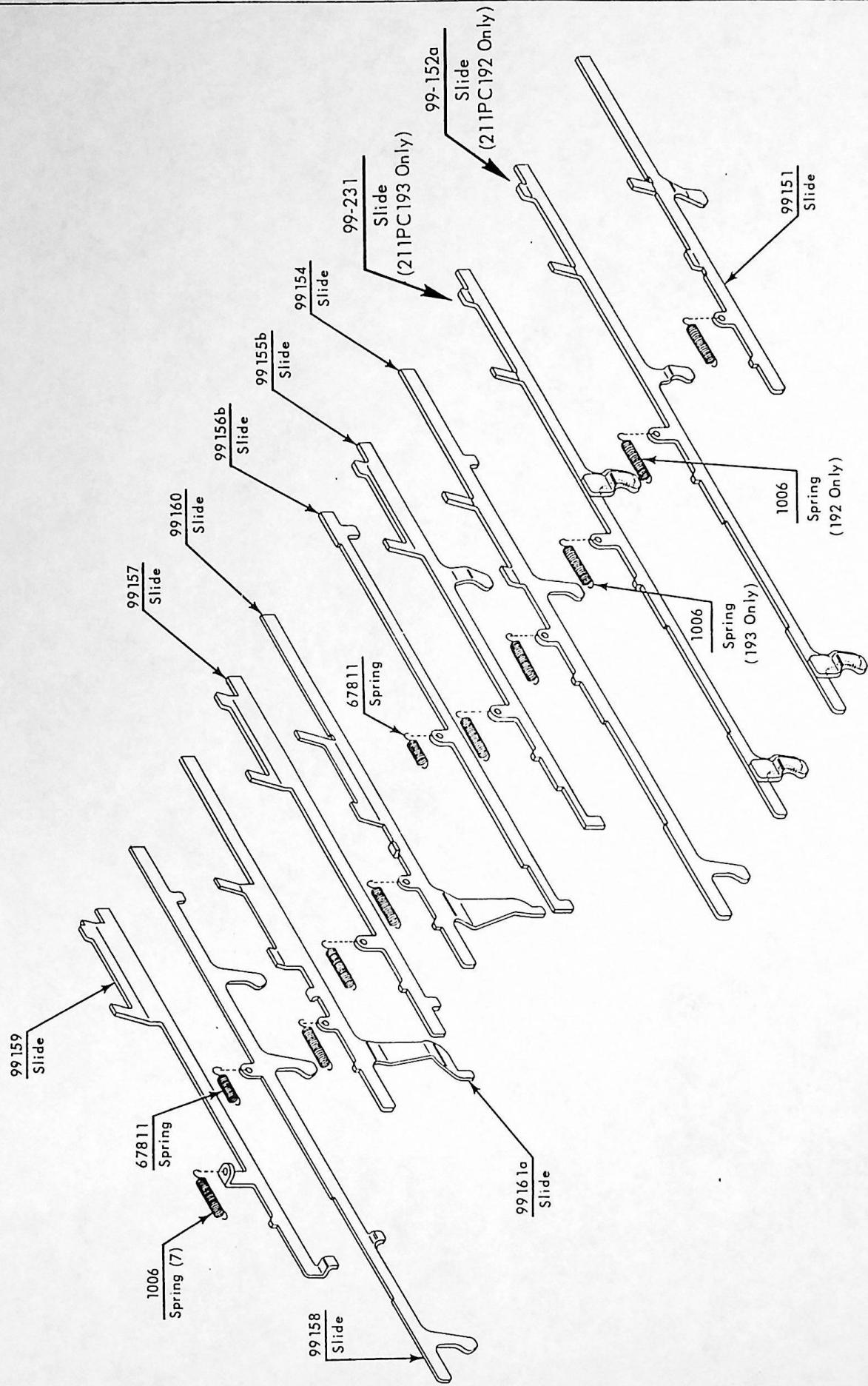


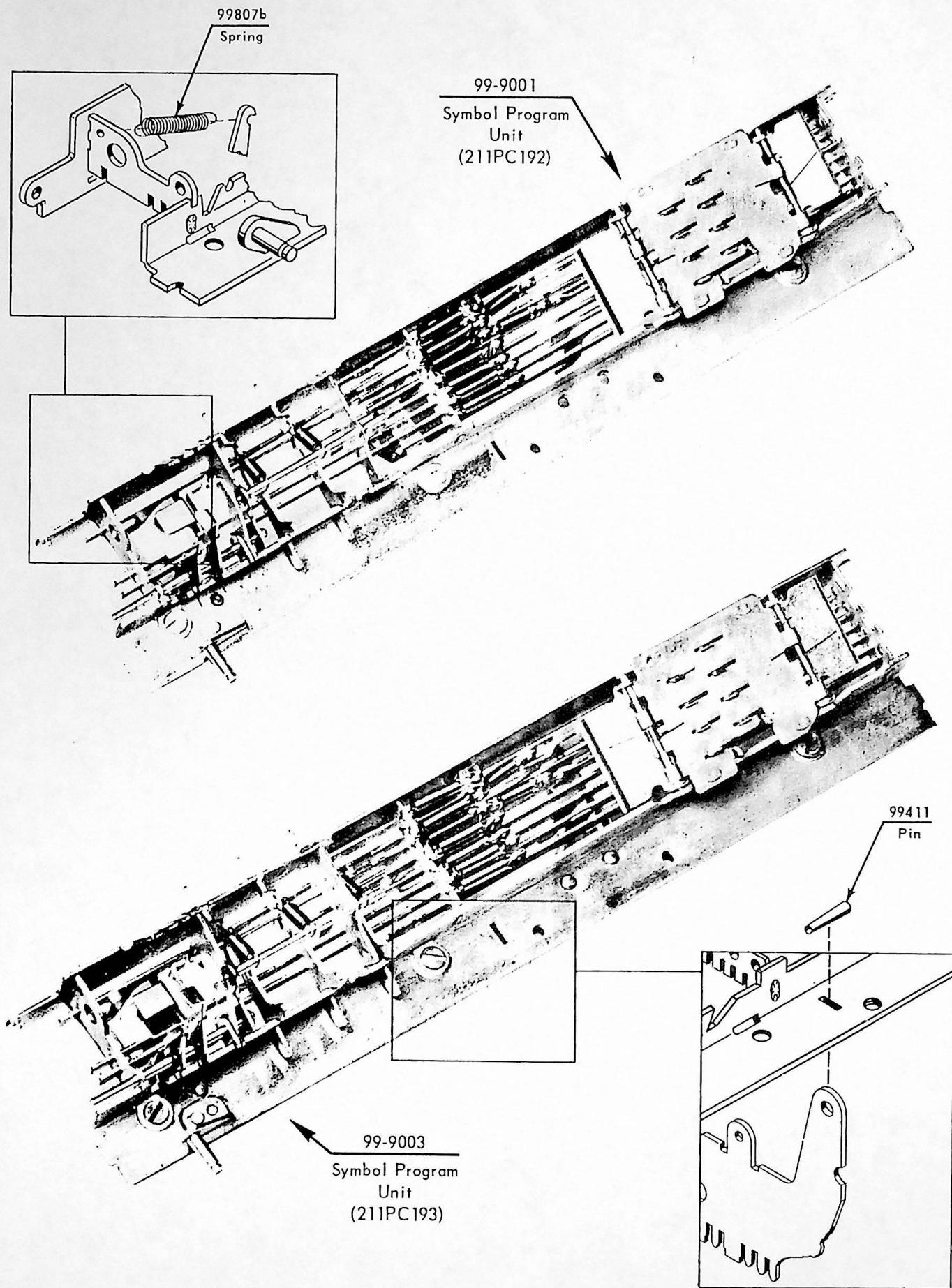


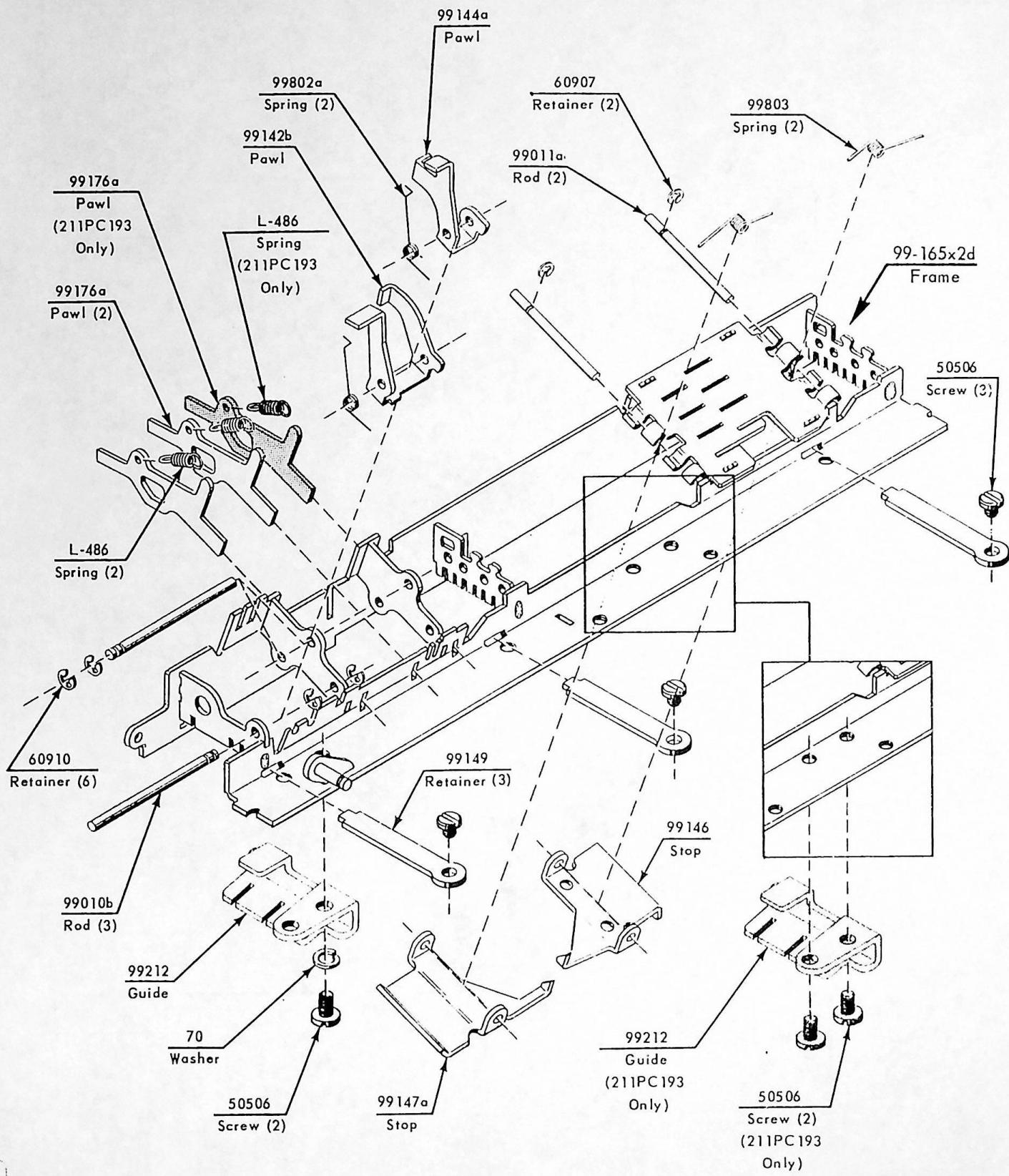


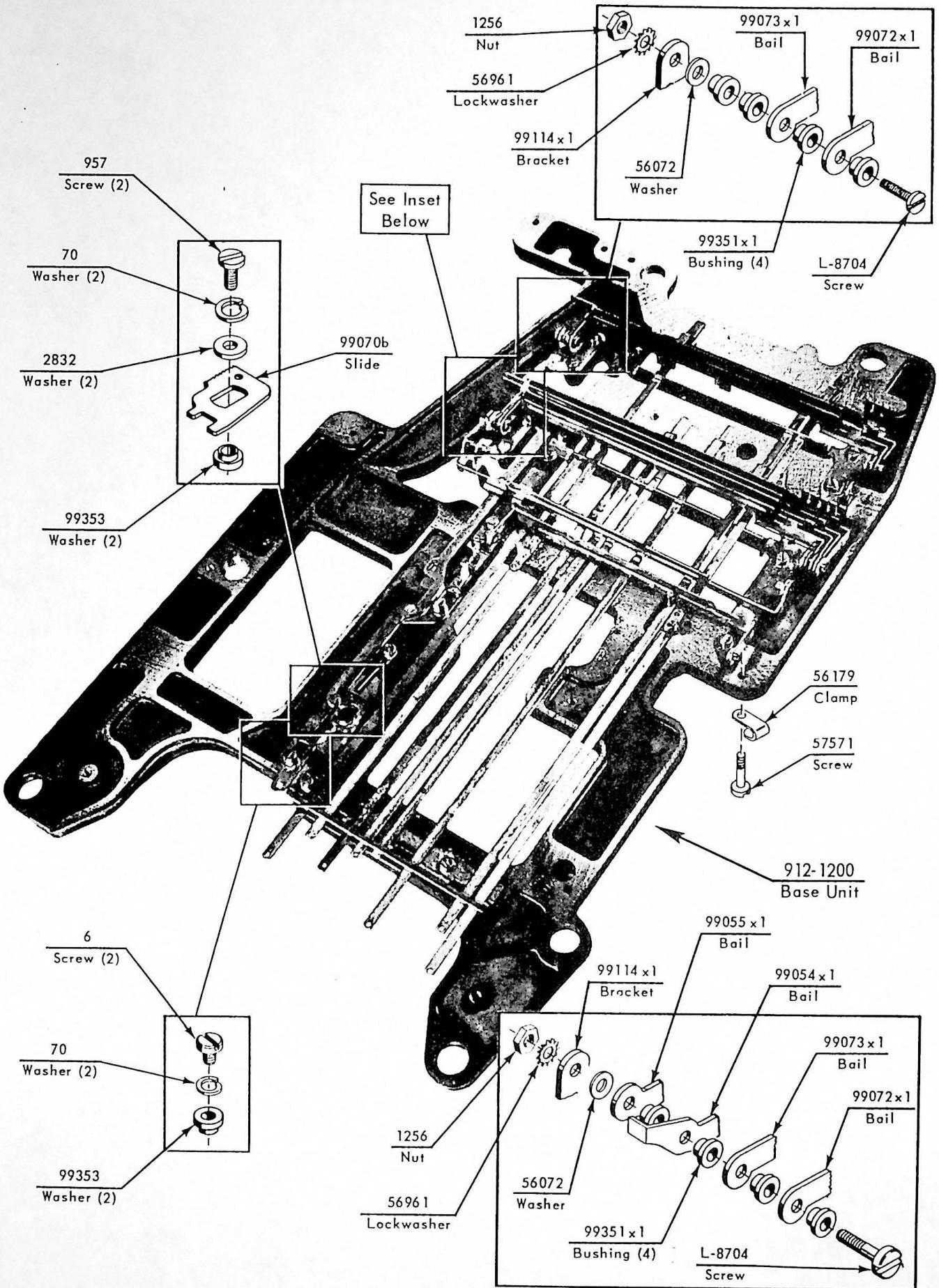
PROGRAM	SLIDE	ASSEMBLY	SEQUENCE	Part No.
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19	99087a		8	99101
18	99089		7	99129
17	99126		6	99083a
15	99130		5	99134
13	99132a		4	99100
14	99131a		3	99099
12	99086a		2	99082b
11	99085b		1	99081

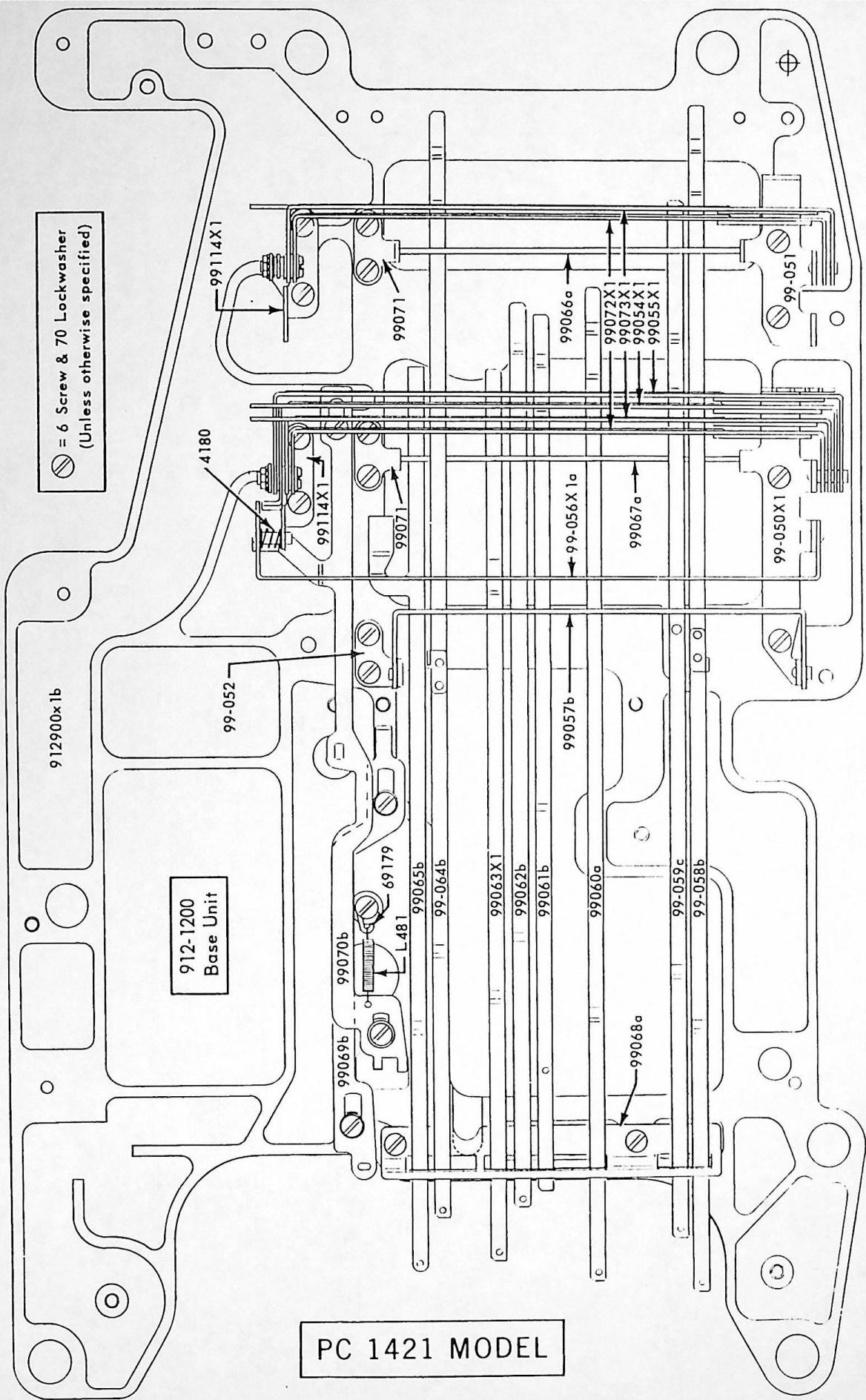






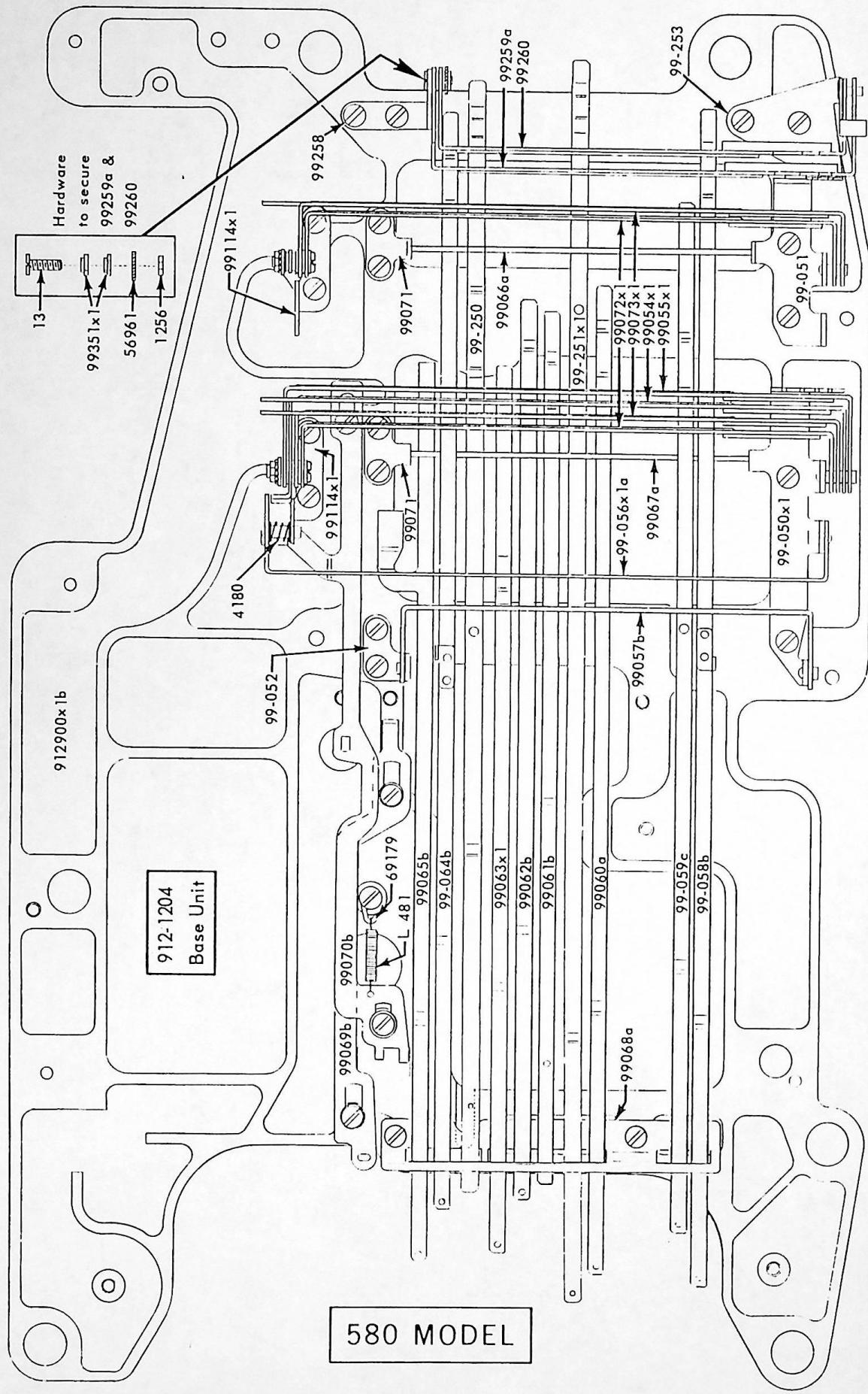


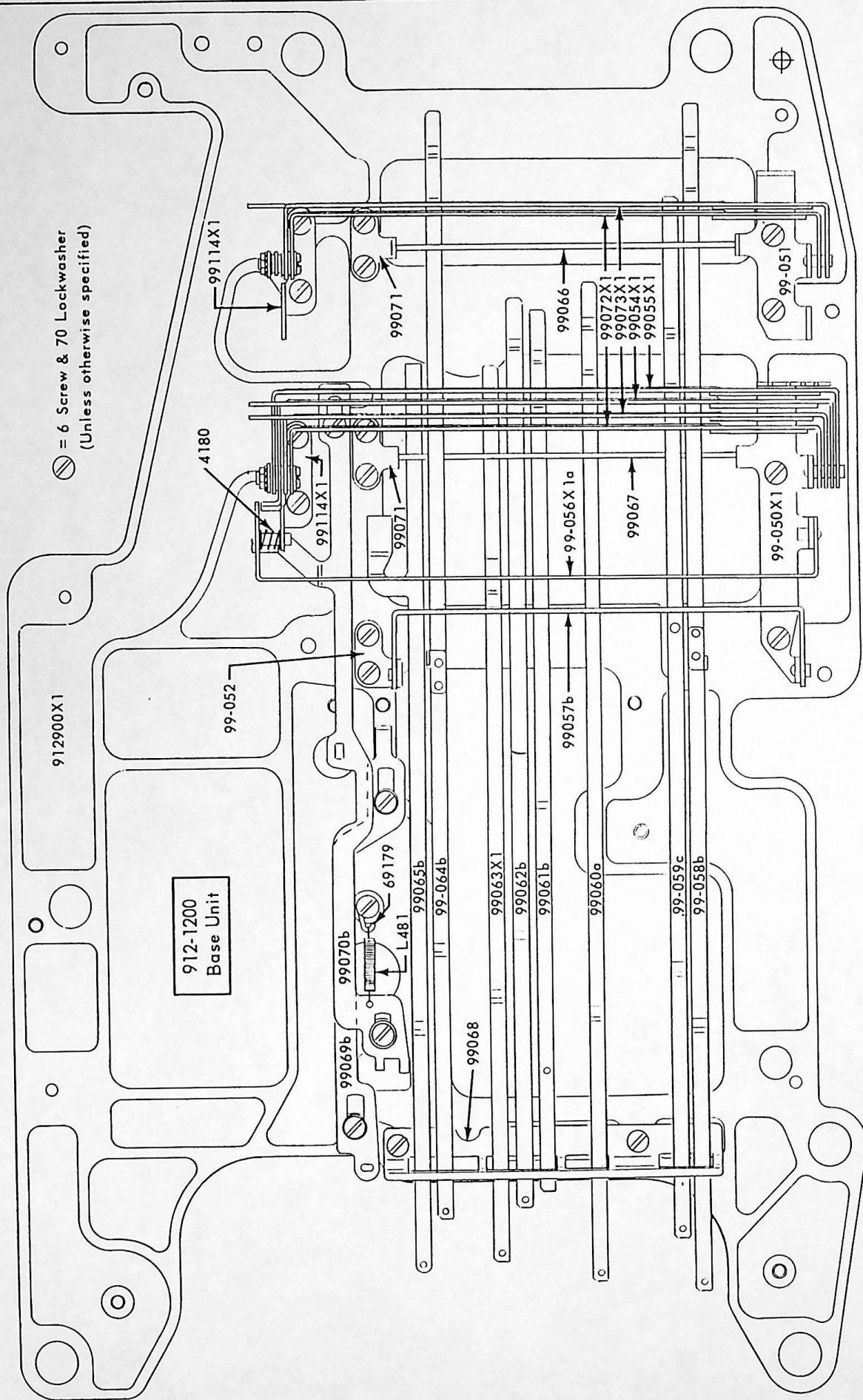


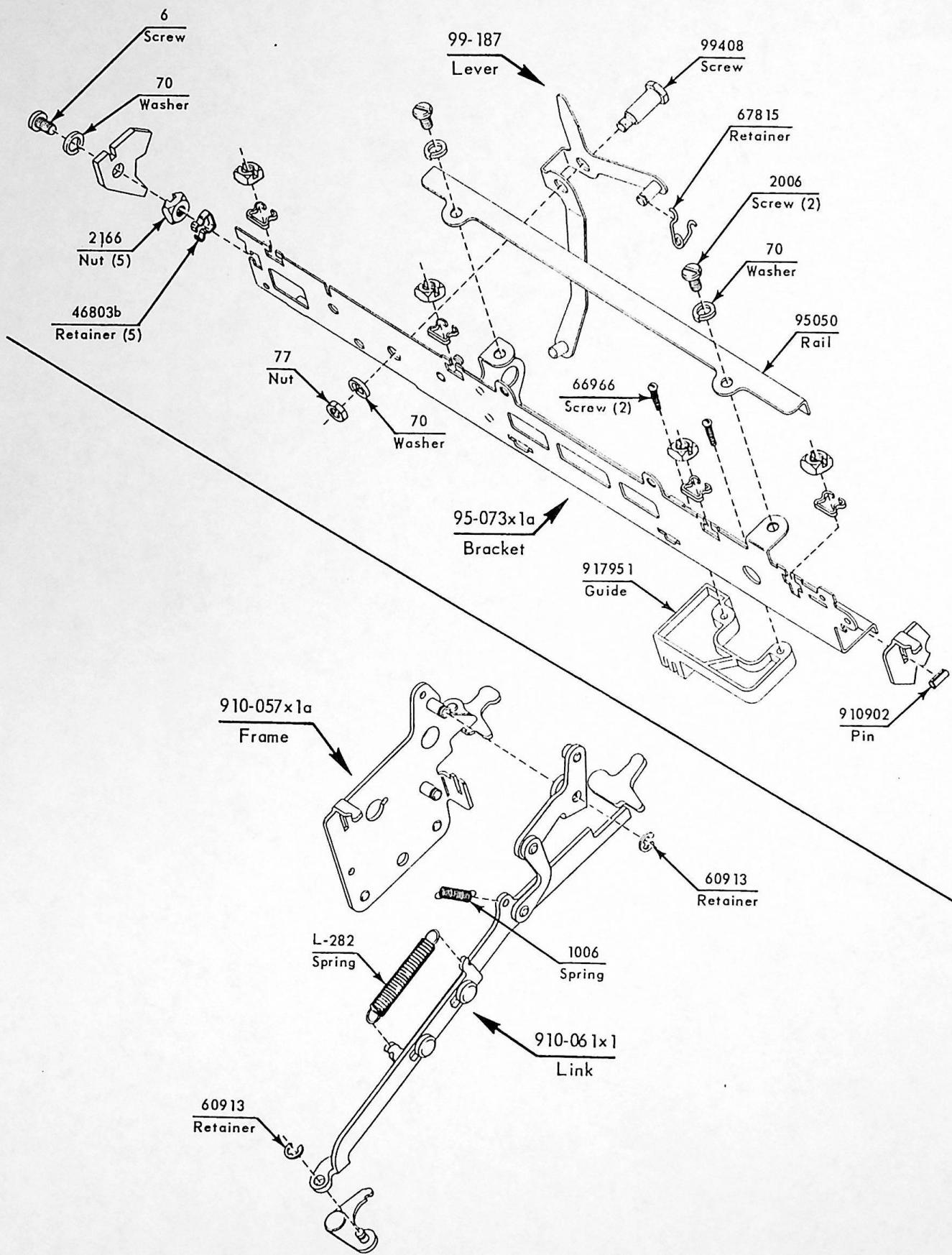


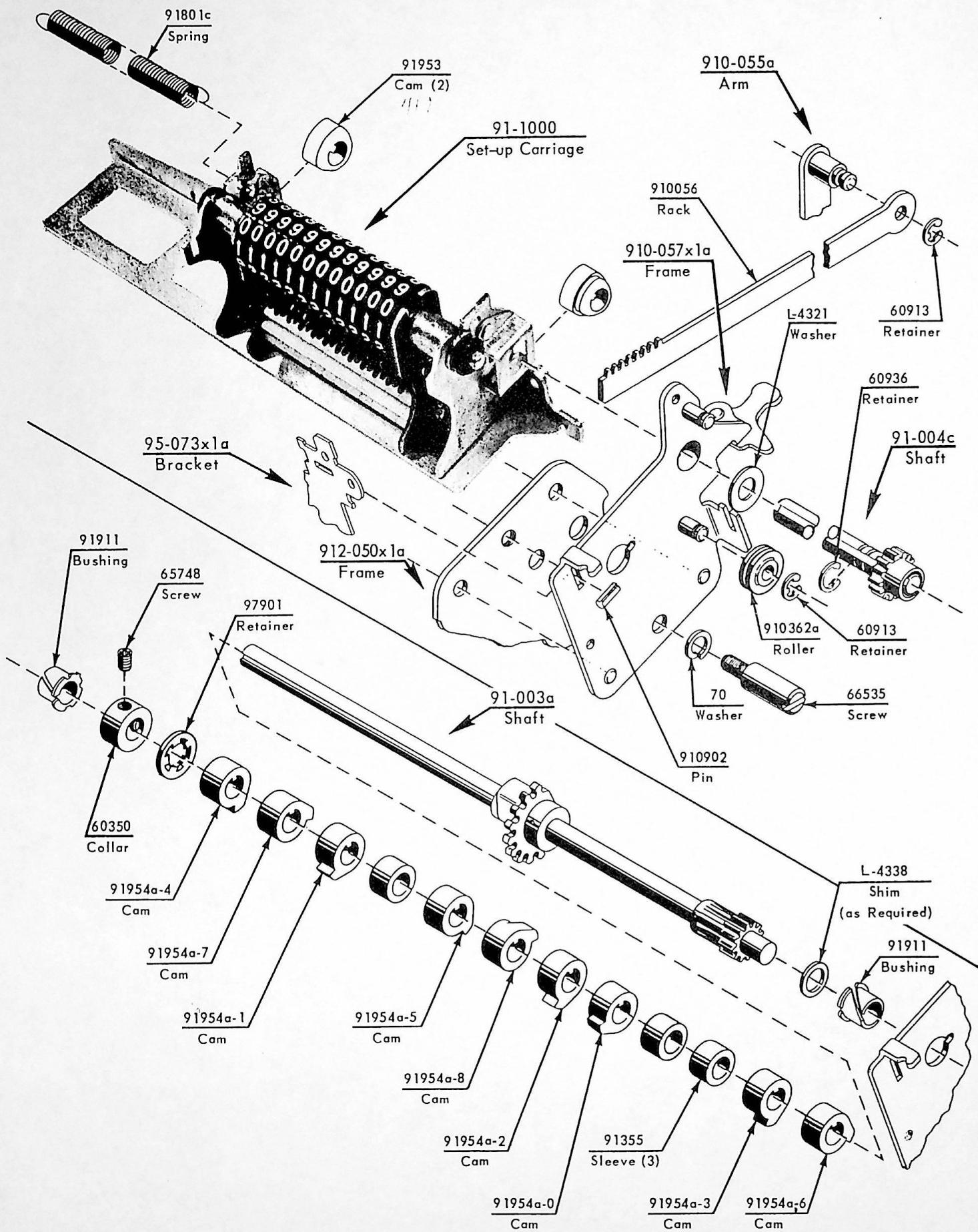
1-30-68

= 6 Screw & 70 Lockwasher  
(Unless otherwise specified)









5-046

Mr. J. F. Woods  
Denver, Colo.

# discontinued assembly notice no. 10

MONROE---A DIVISION OF LITTON INDUSTRIES \* SERVICE OPERATIONS DEPARTMENT \* ORANGE, NEW JERSEY \* PRINTED IN U.S.A.  
THE INFORMATION CONTAINED IN THIS NOTIFICATION IS THE CONFIDENTIAL PROPERTY OF  
MONROE DIVISION, LITTON BUSINESS SYSTEMS, INC.

Date: OCTOBER 29, 1969

Effective immediately, the following described assembly/s will no longer be available on requisition from Orange.

Branch offices should order required piece parts or sub-assemblies and repair such units locally.

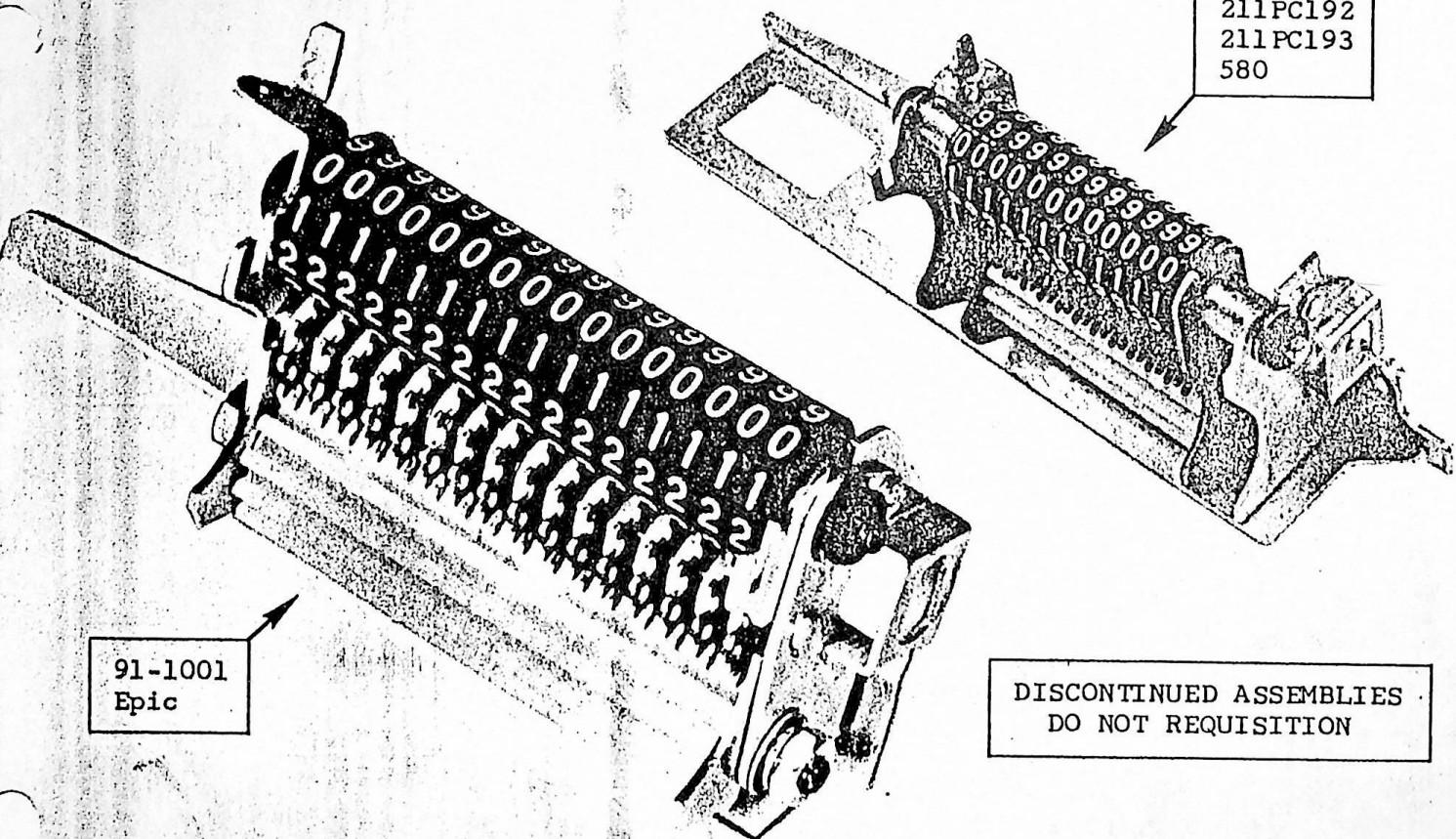
Please update your copy of the Master Price Catalog by marking the following assembly numbers "DISCONTINUED".

Assembly No./s: 91-1000 and 91-1001

Description: Set-up Carriage Assembly

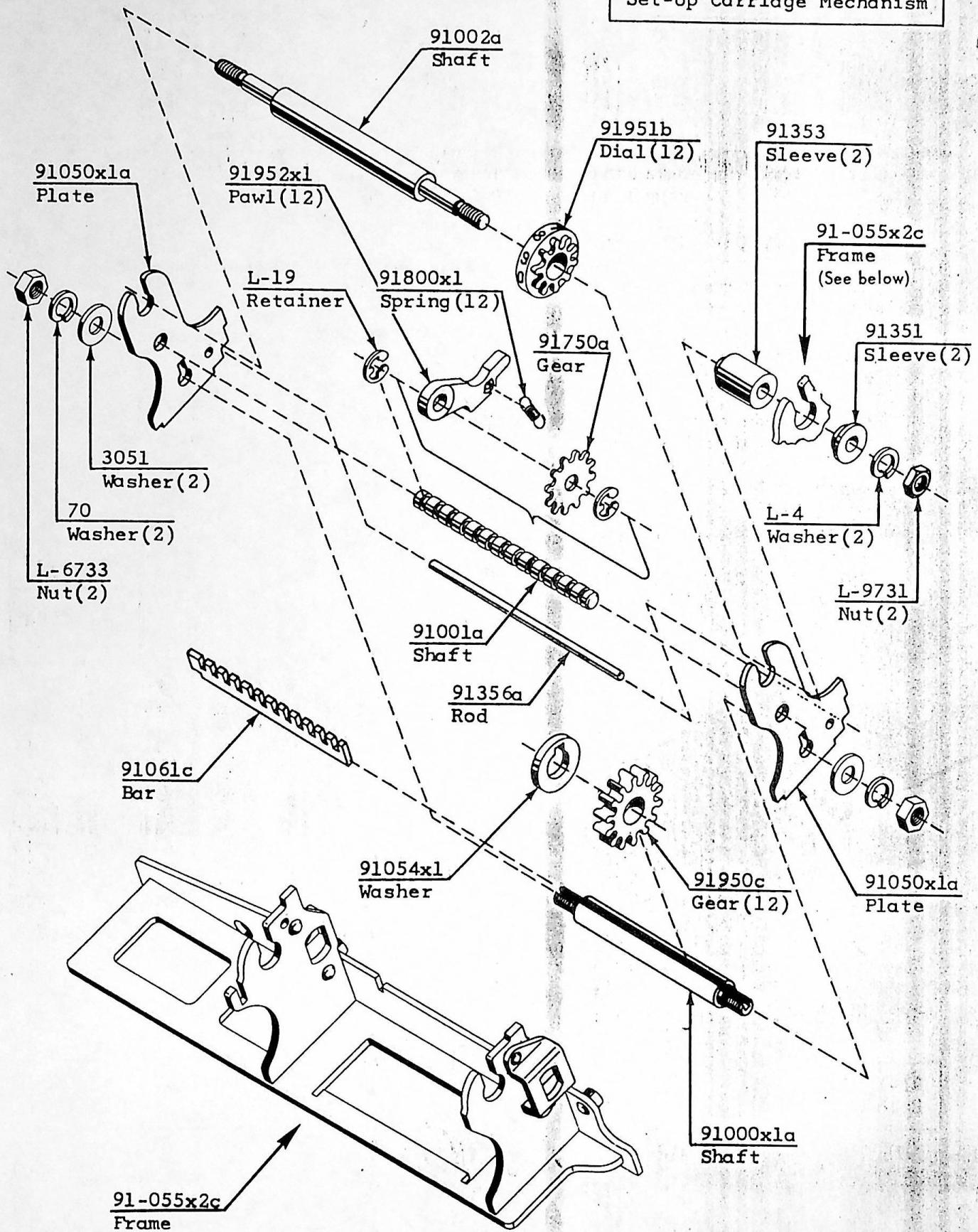
Model/s: 211PC192, 211PC193, 580 and Epic

91-1000  
211PC192  
211PC193  
580

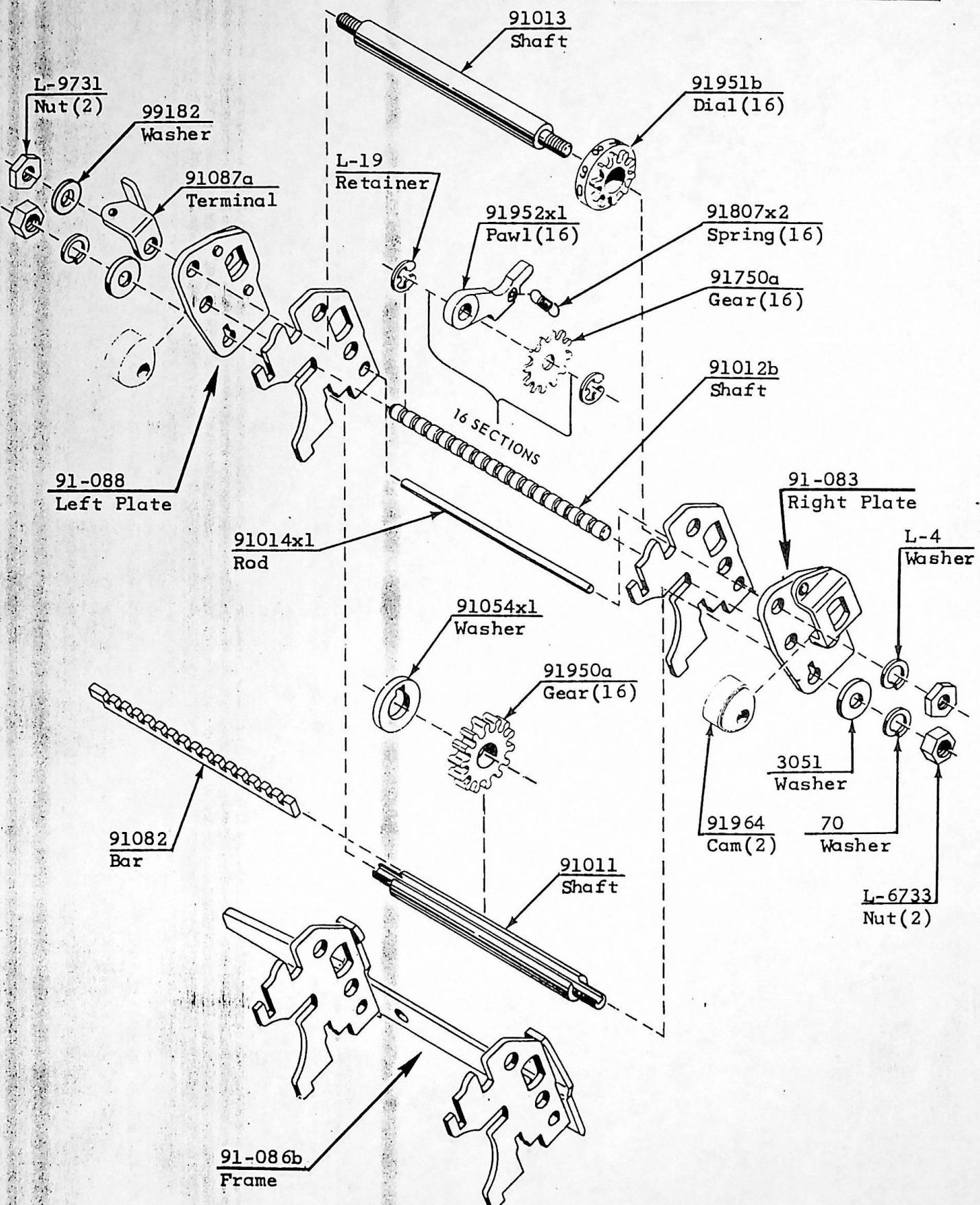


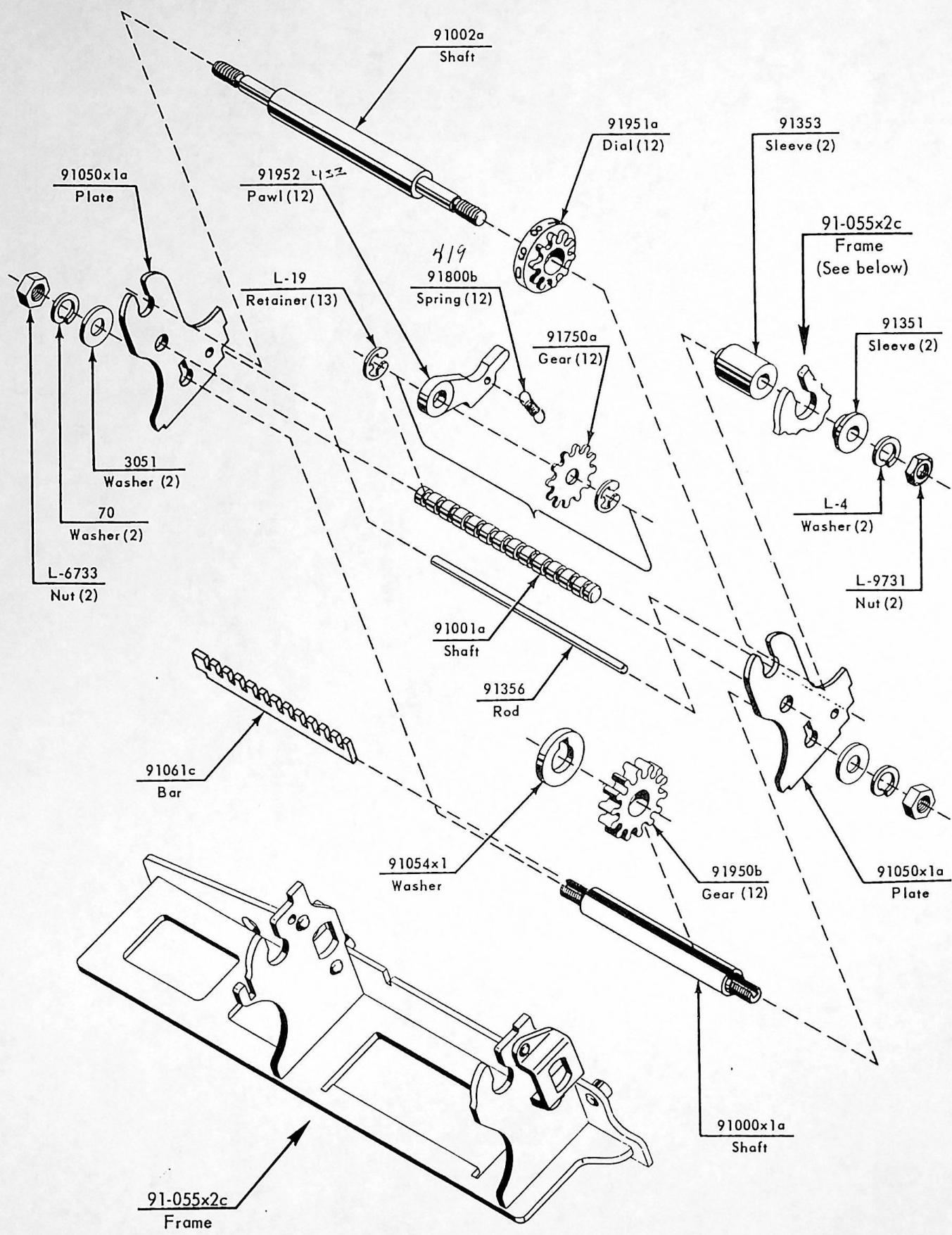
Repair parts illustrated on pages 2 and 3 of this notice will remain available.

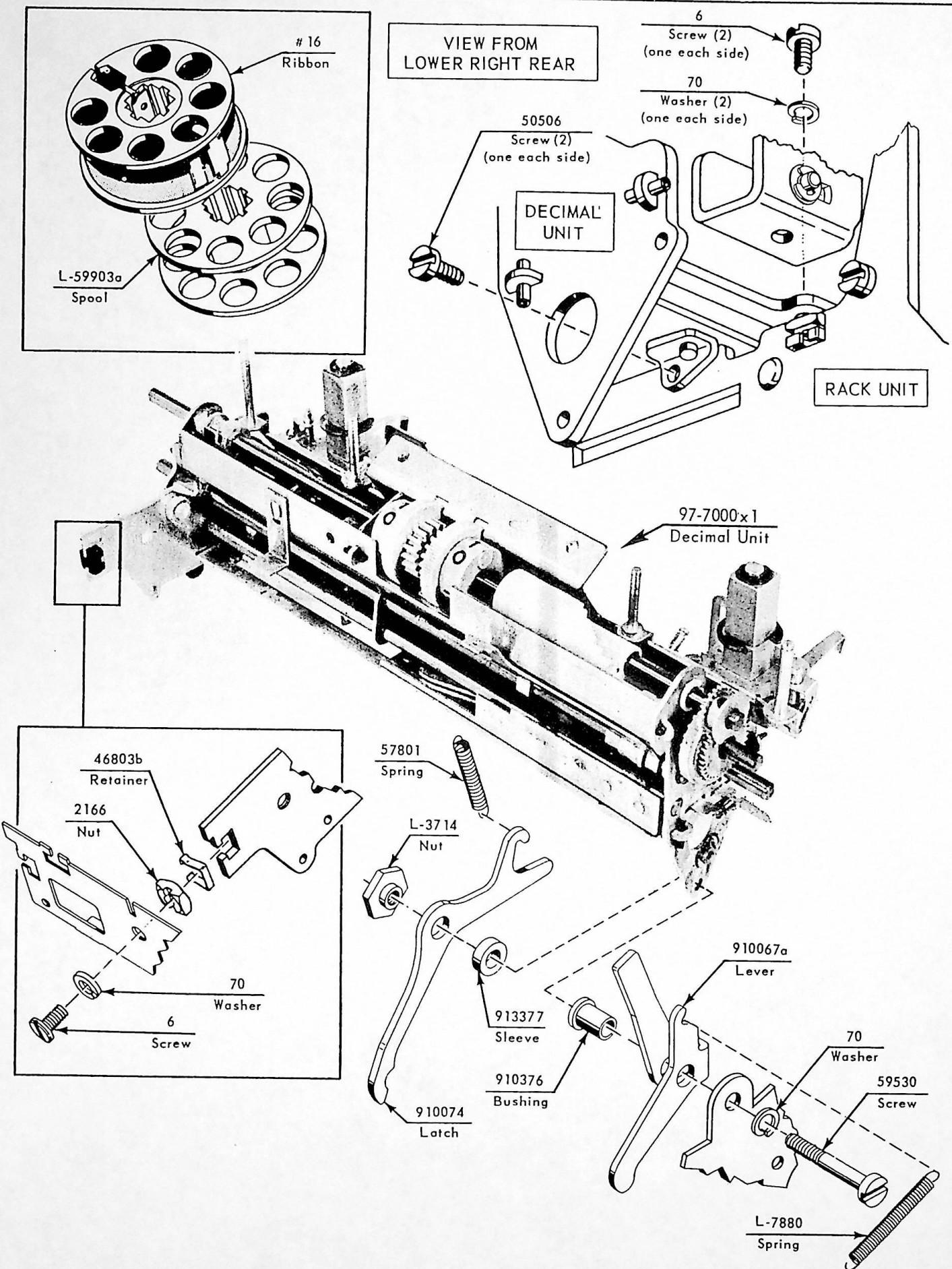
211PC192, 211PC193, & 580  
Set-Up Carriage Mechanism

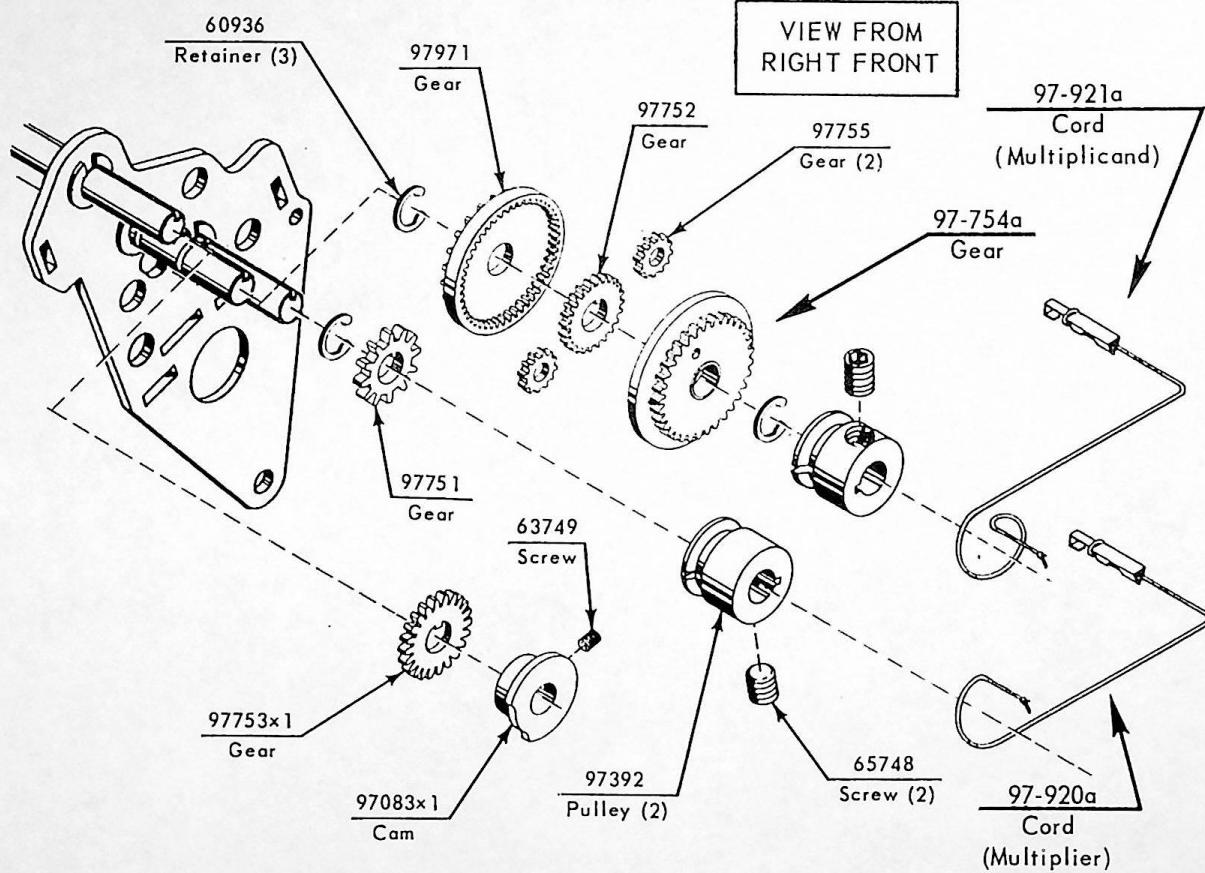
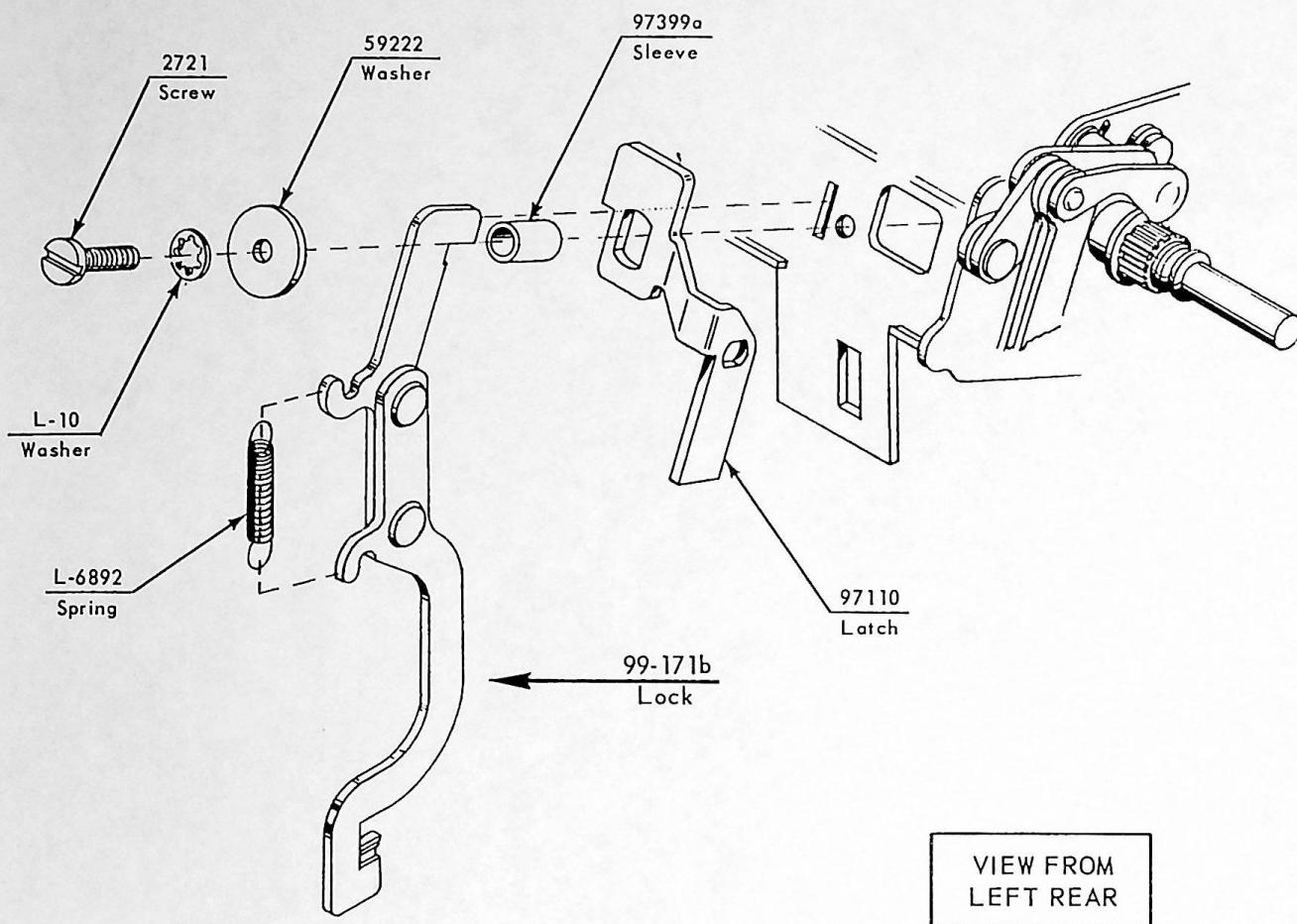


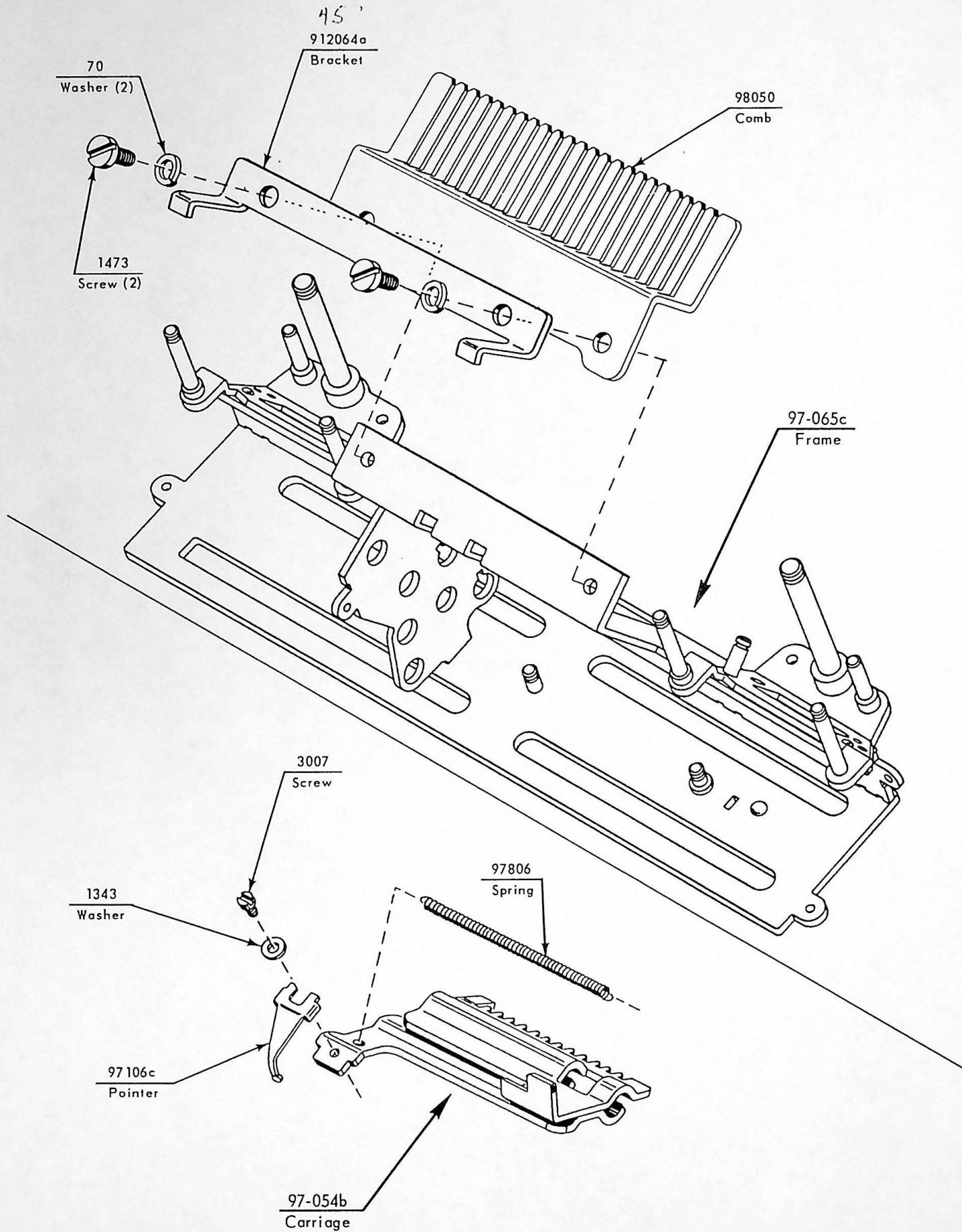
Epic (611PR001)  
Set-Up Carriage Mechanism

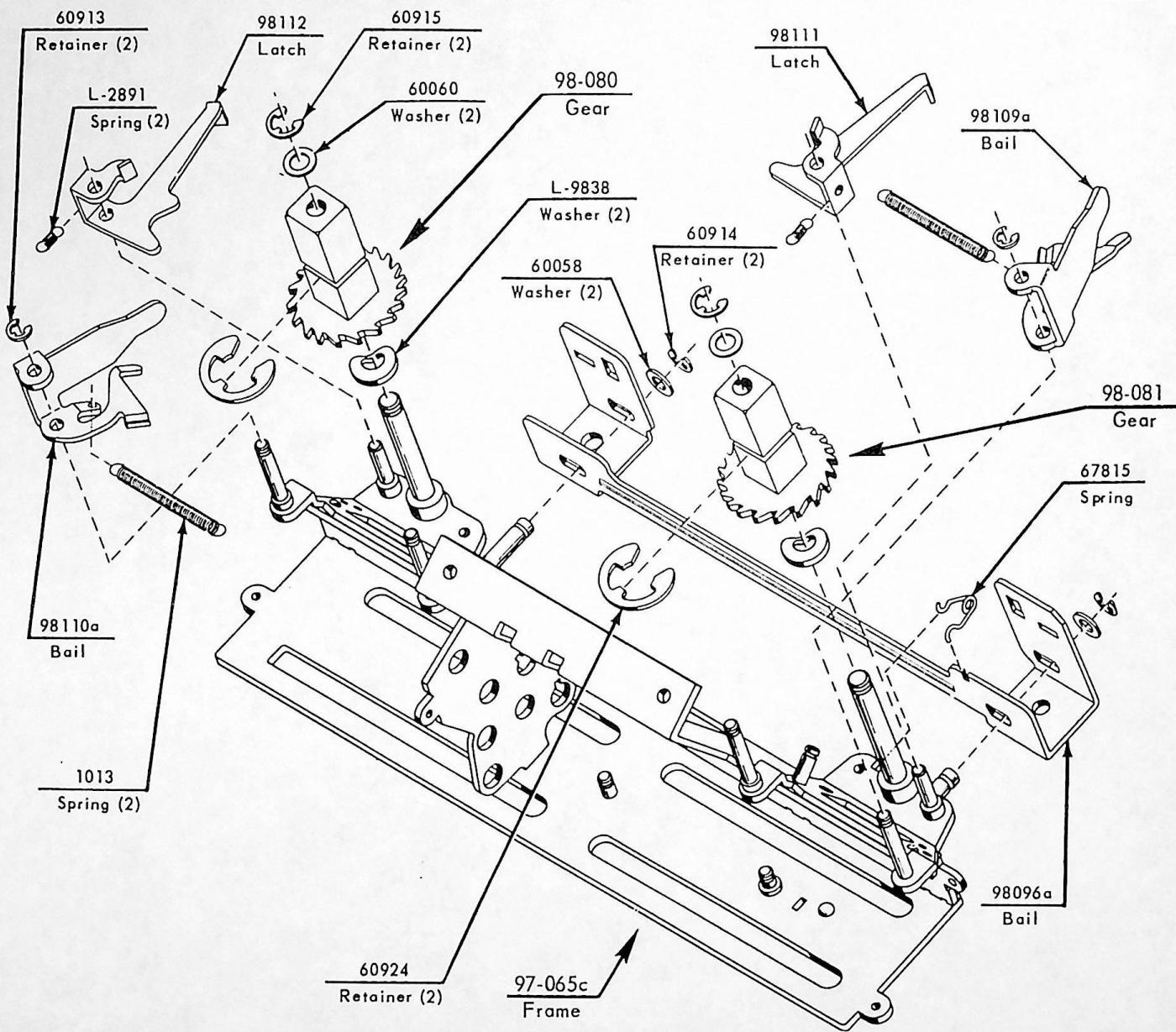
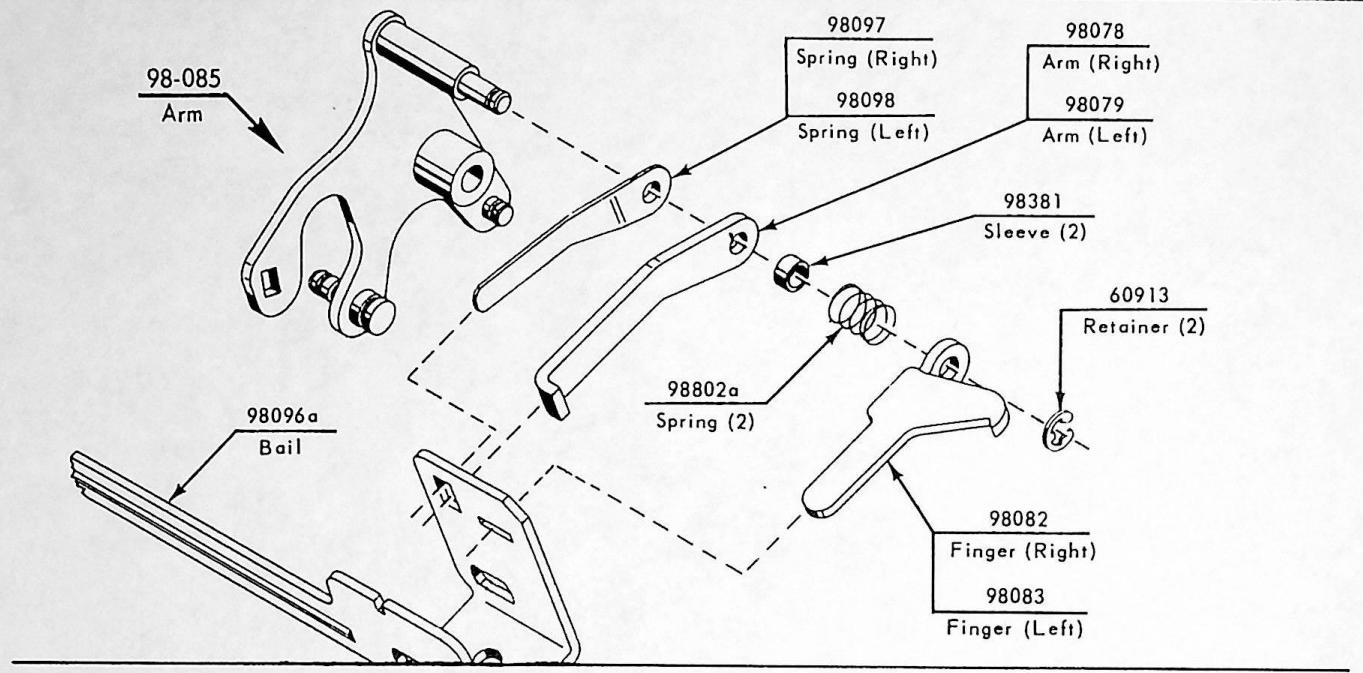


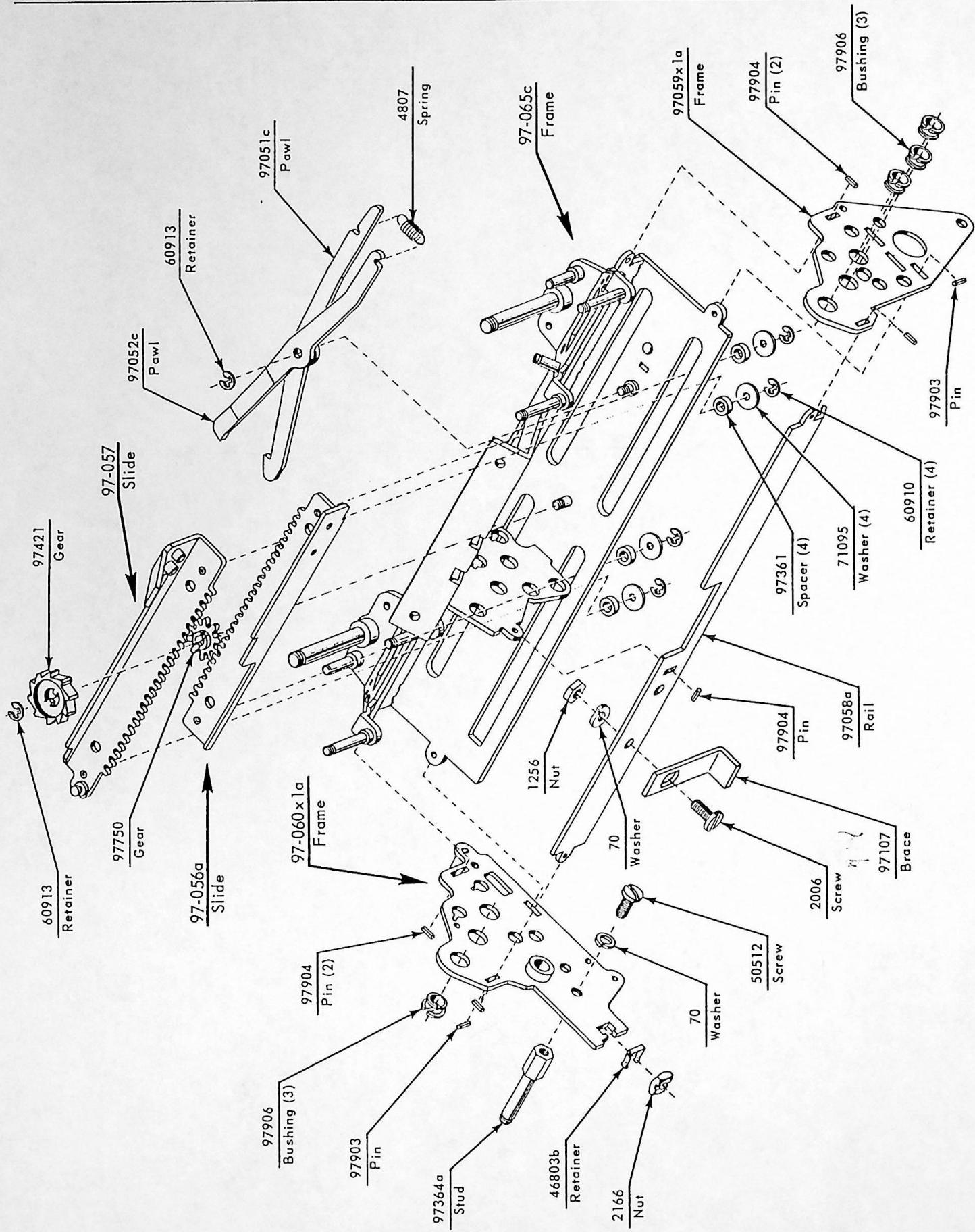


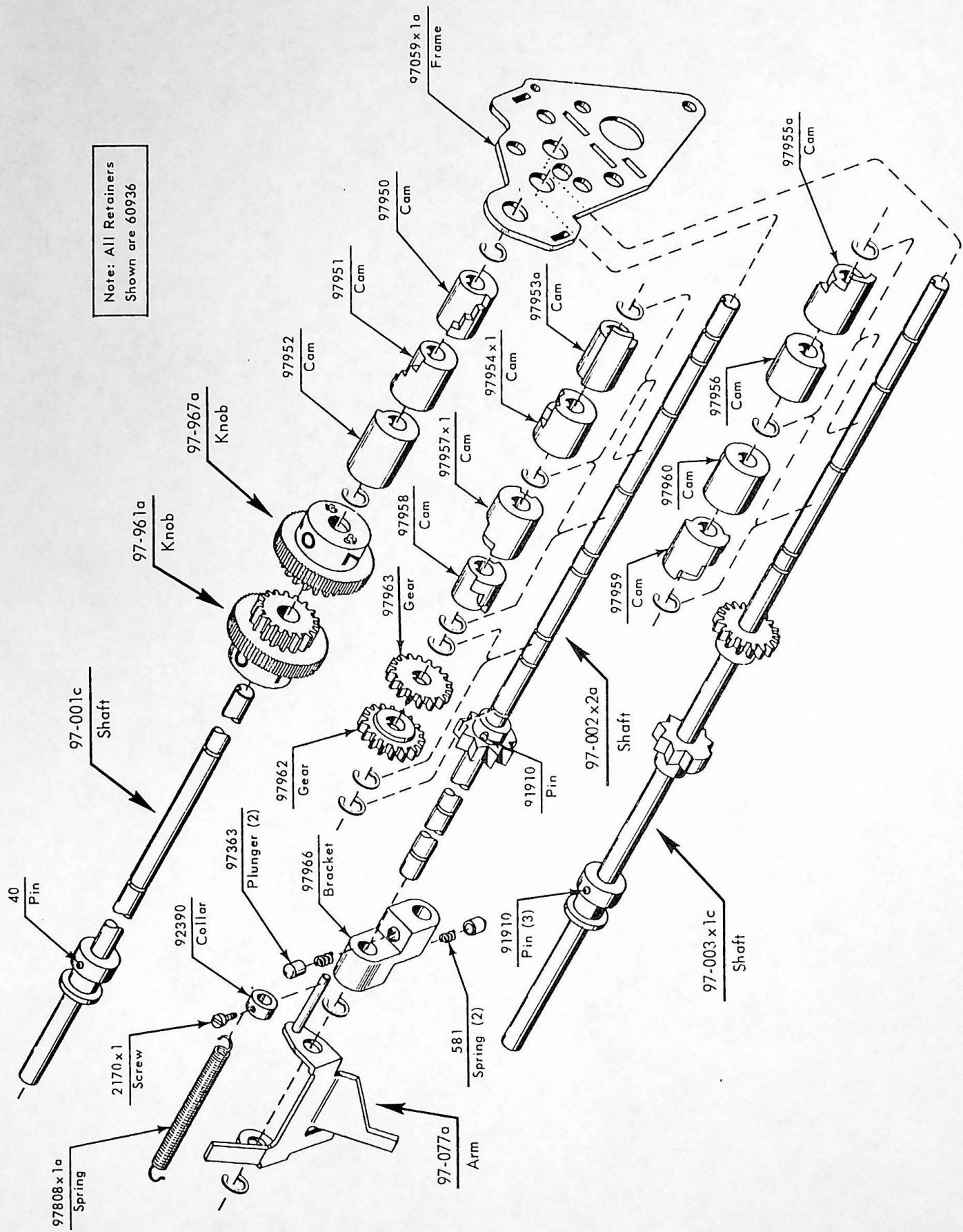


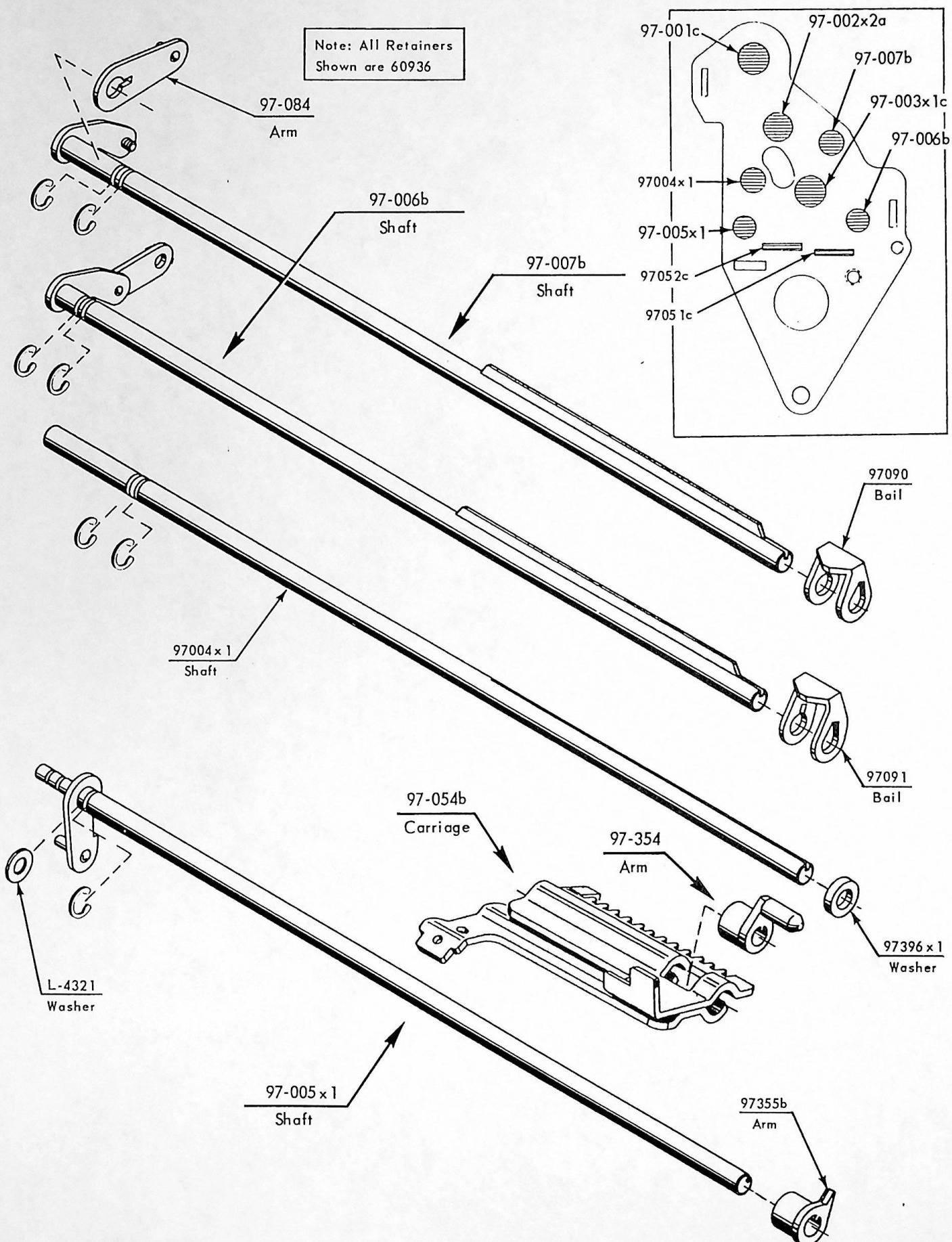


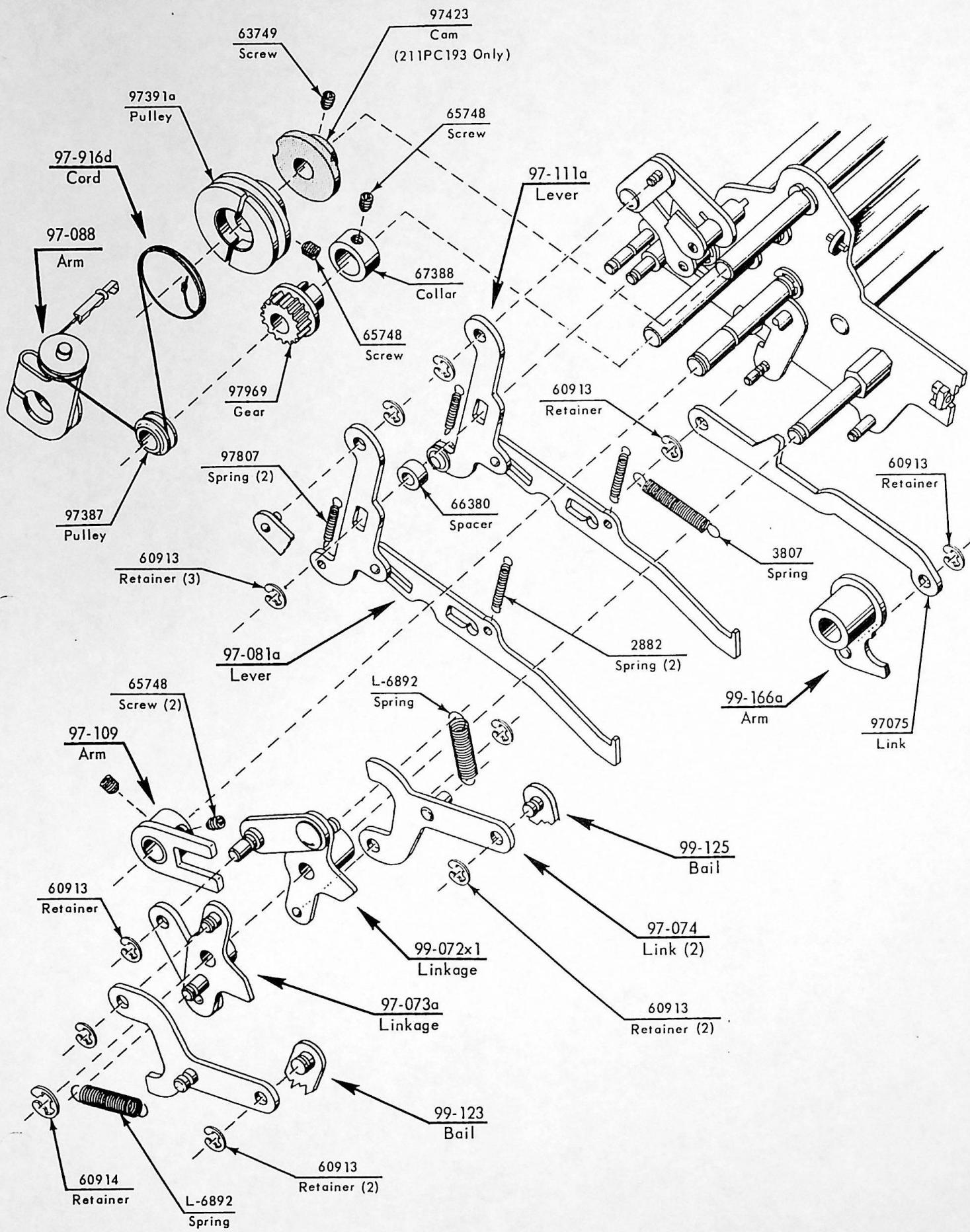


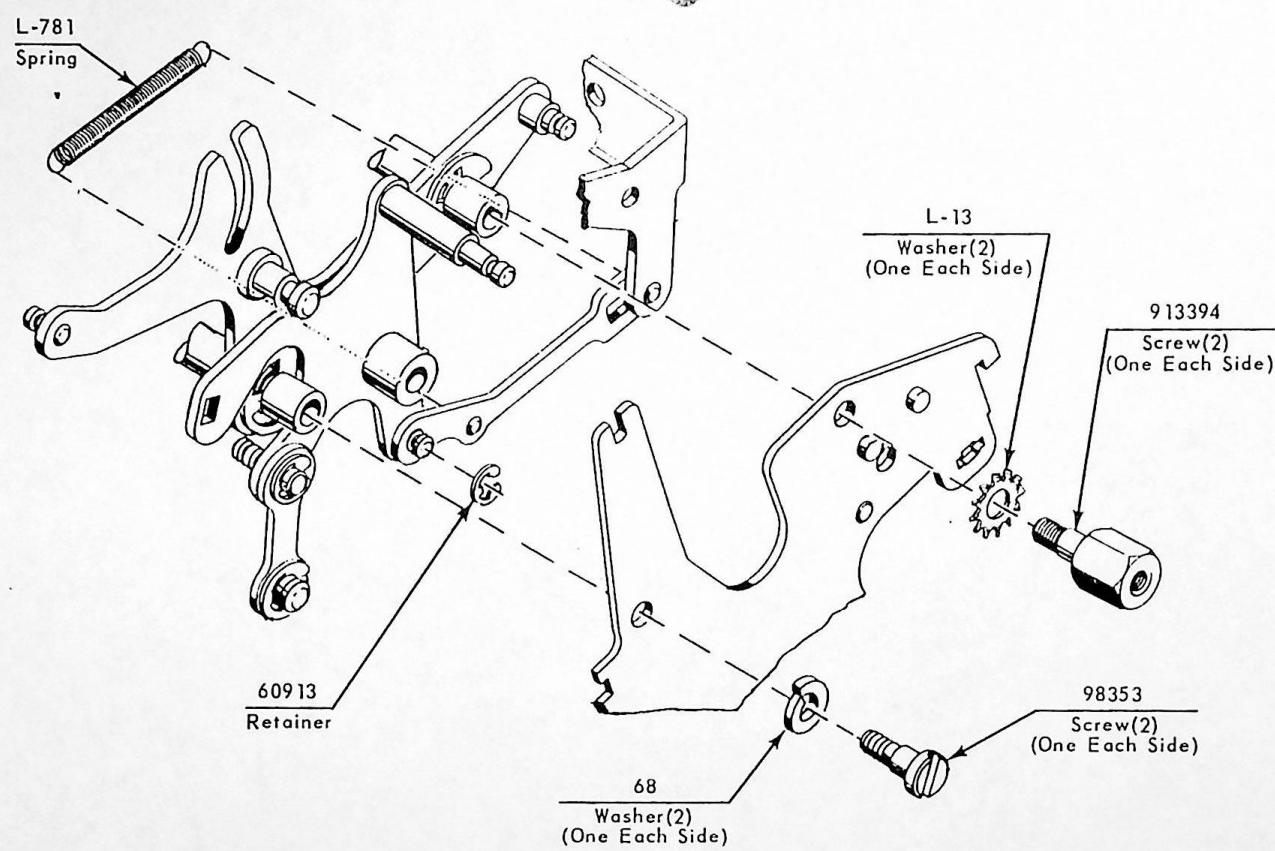
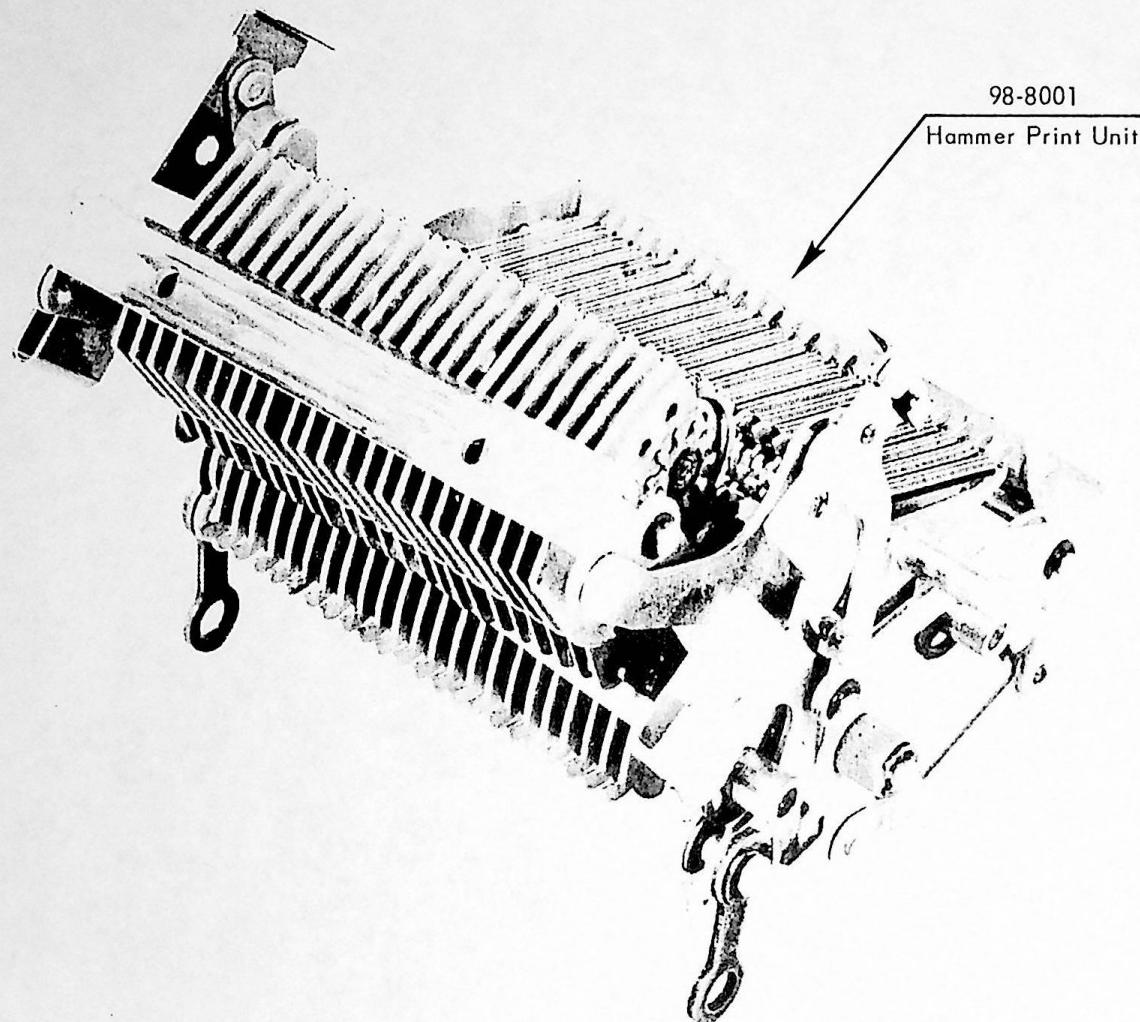


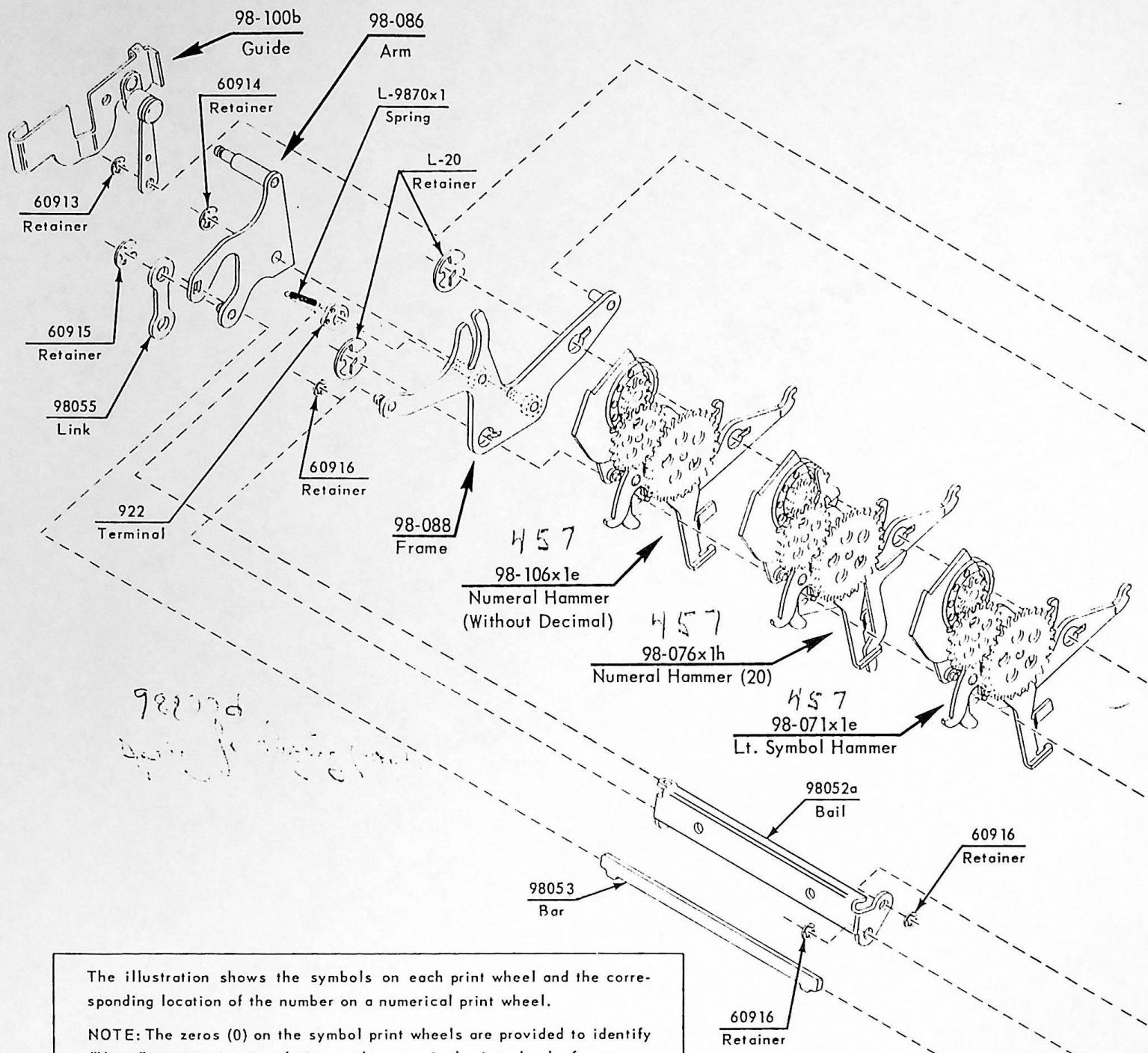








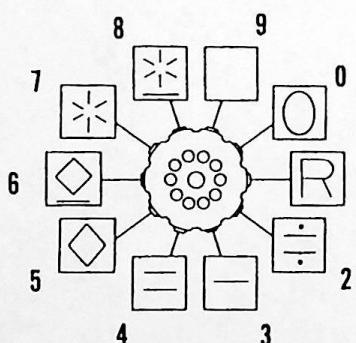




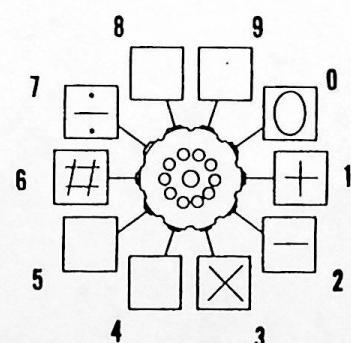
The illustration shows the symbols on each print wheel and the corresponding location of the number on a numerical print wheel.

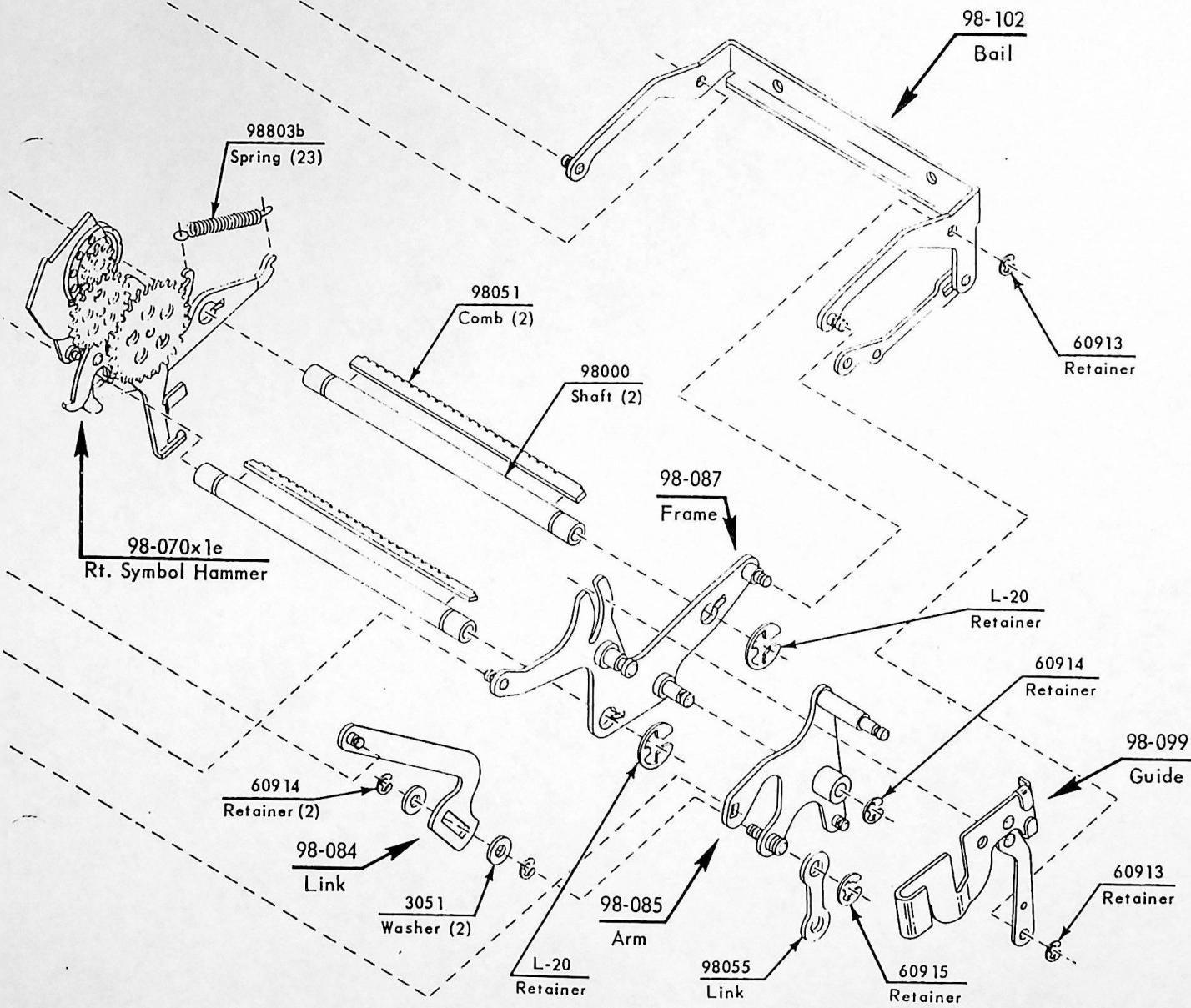
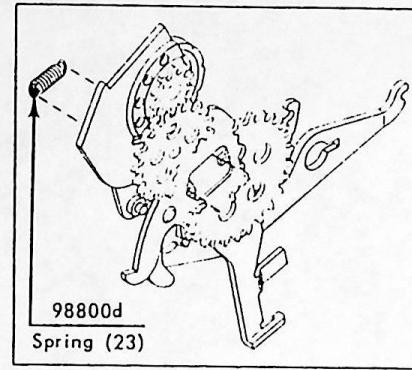
NOTE: The zeros (0) on the symbol print wheels are provided to identify "Home" positioning in relation to the numerical print wheel...for assembly purposes. They do not print.

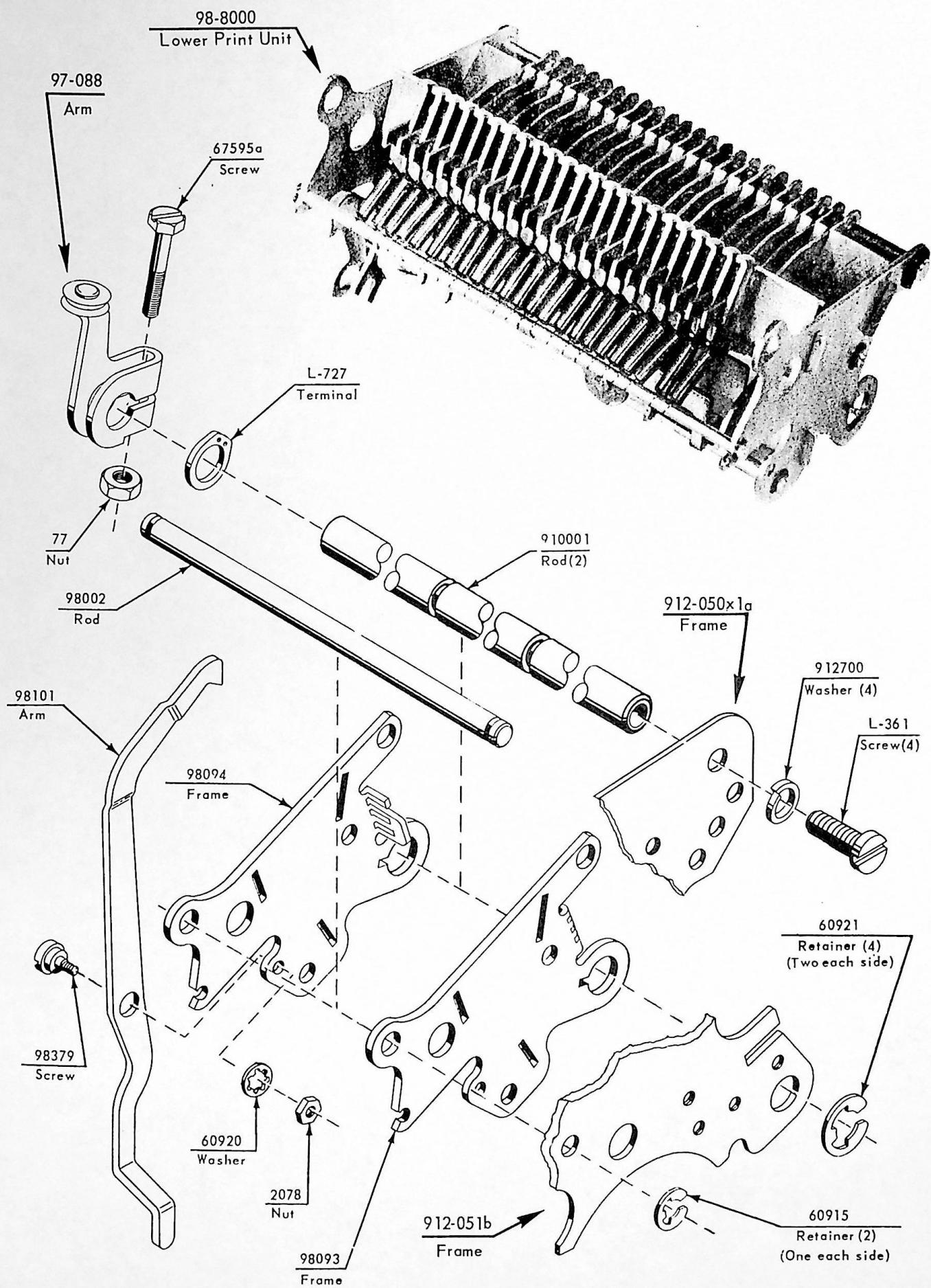
Left Symbol Wheel

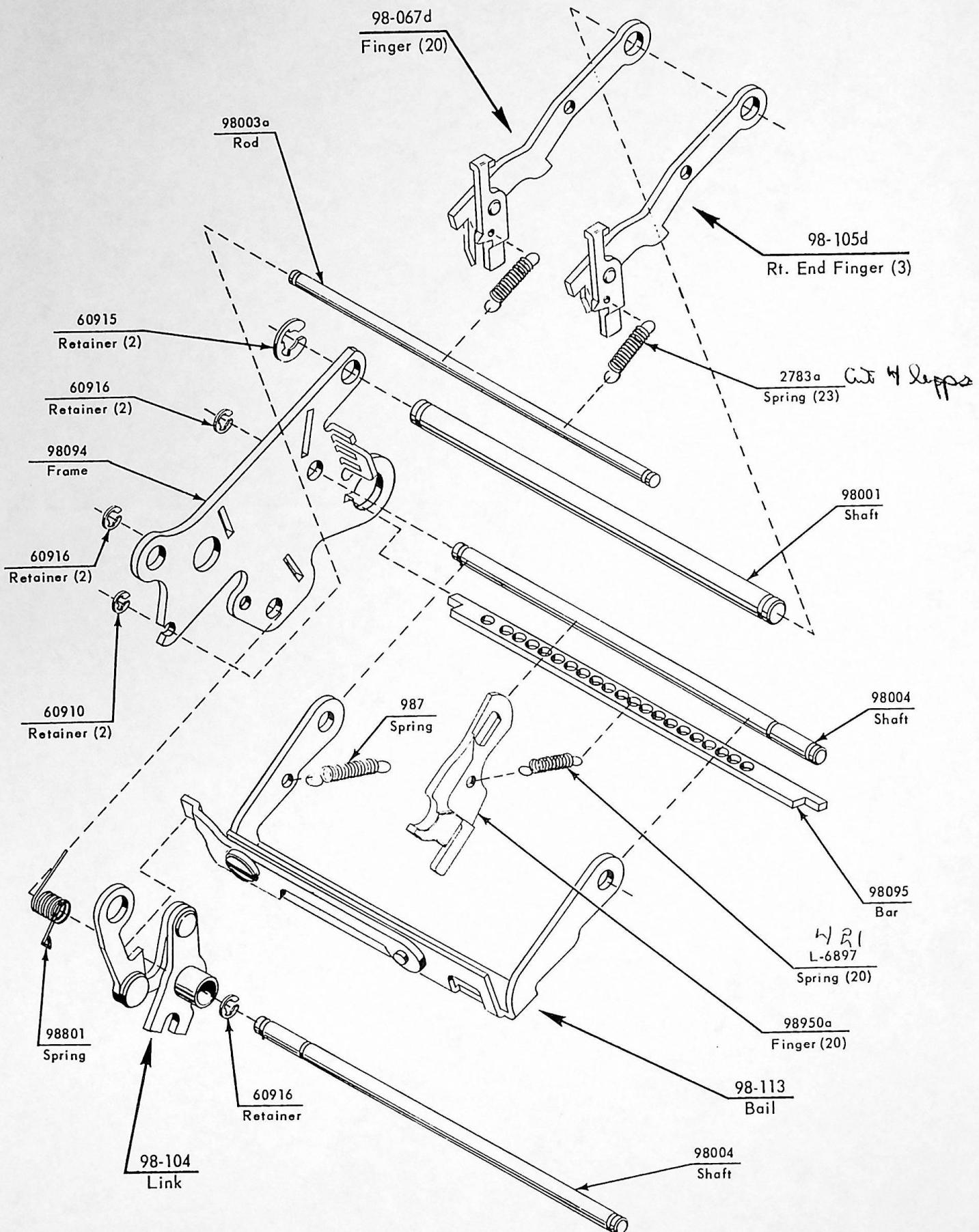


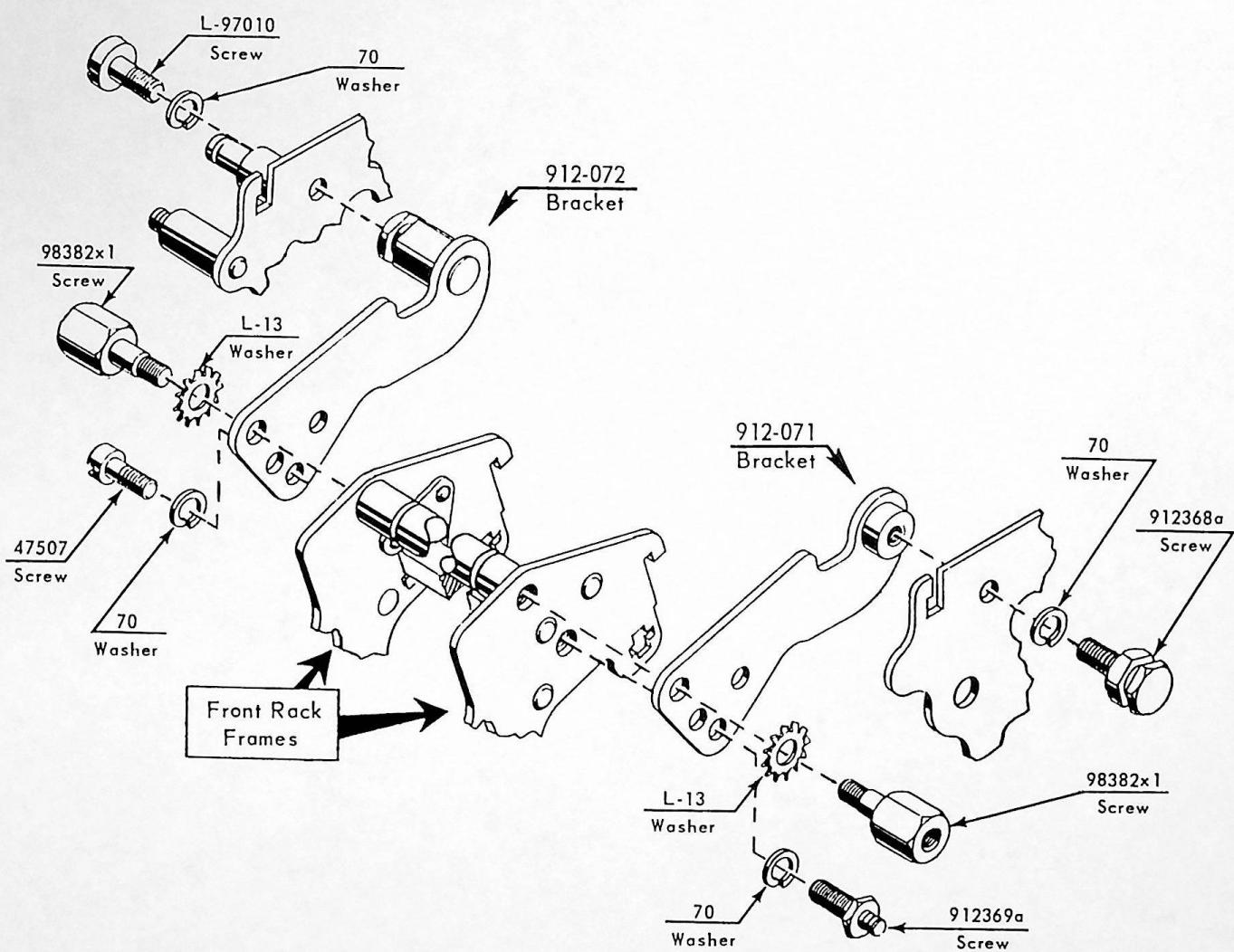
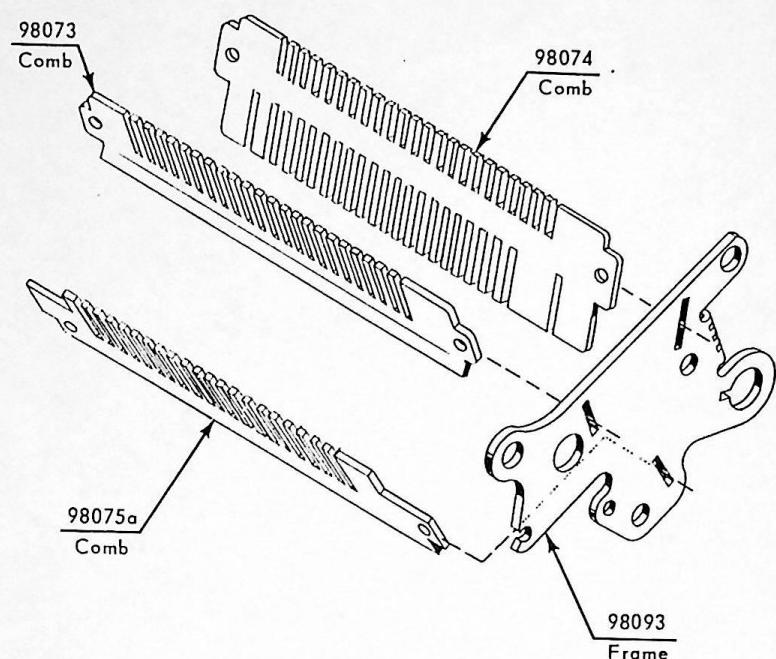
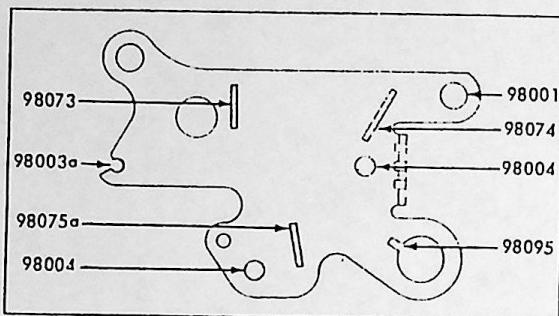
Right Symbol Wheel

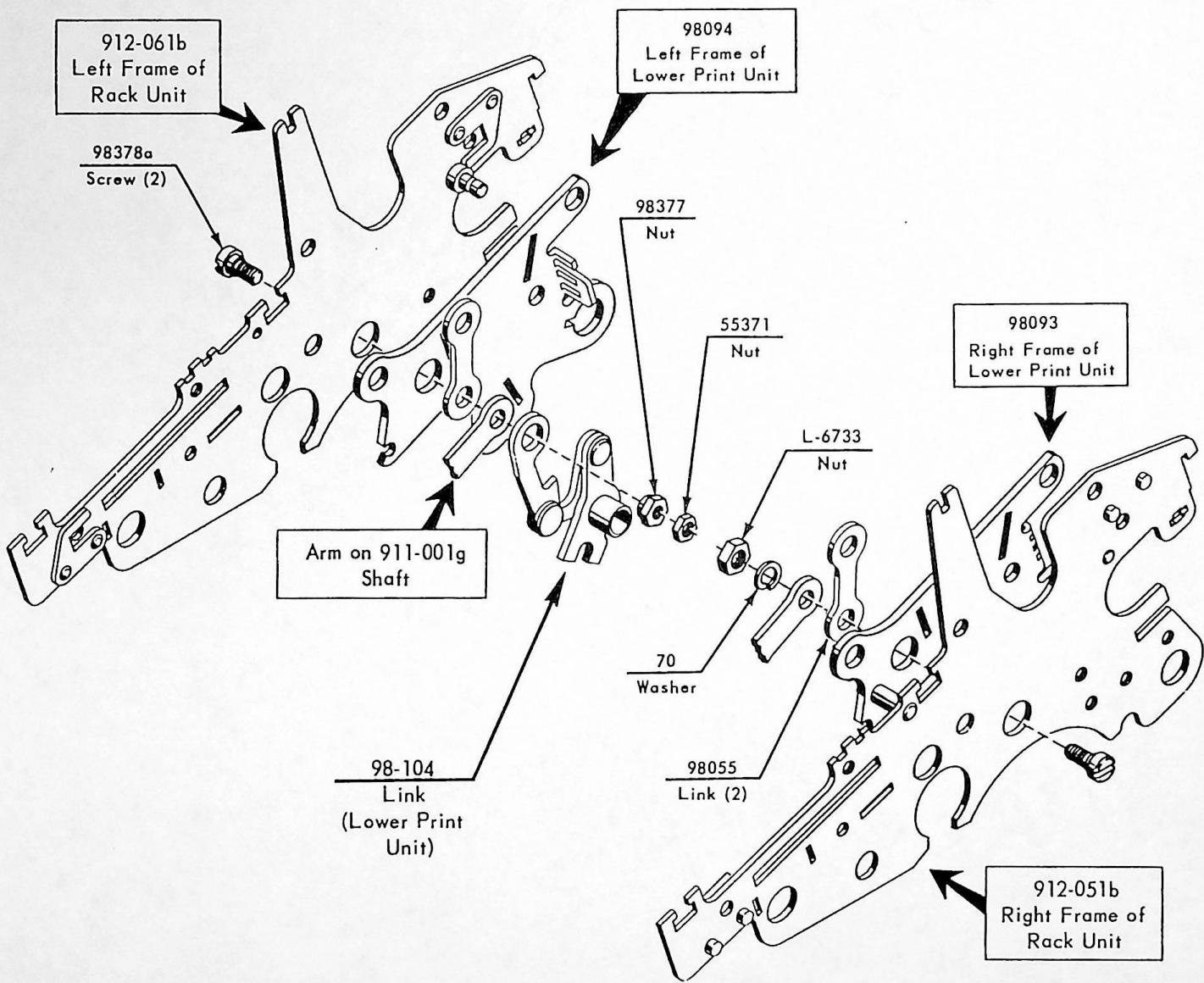
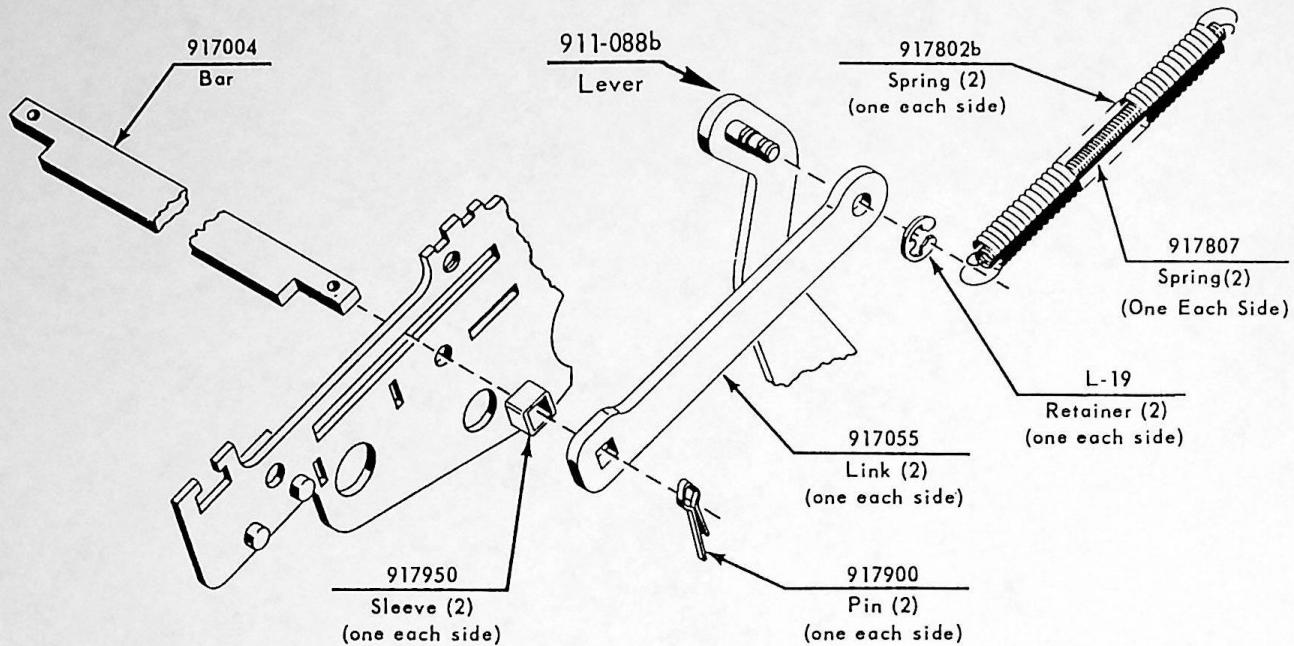


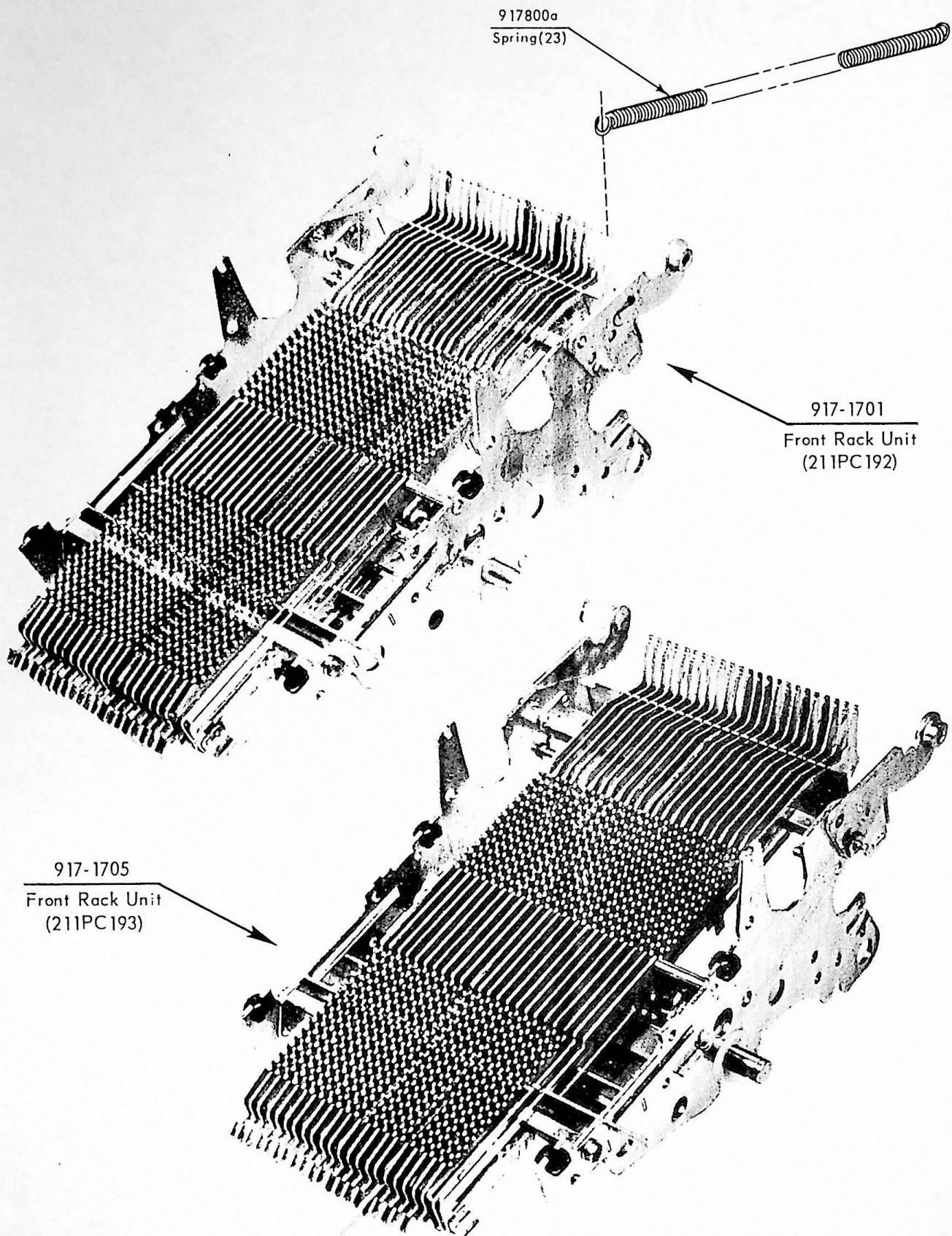


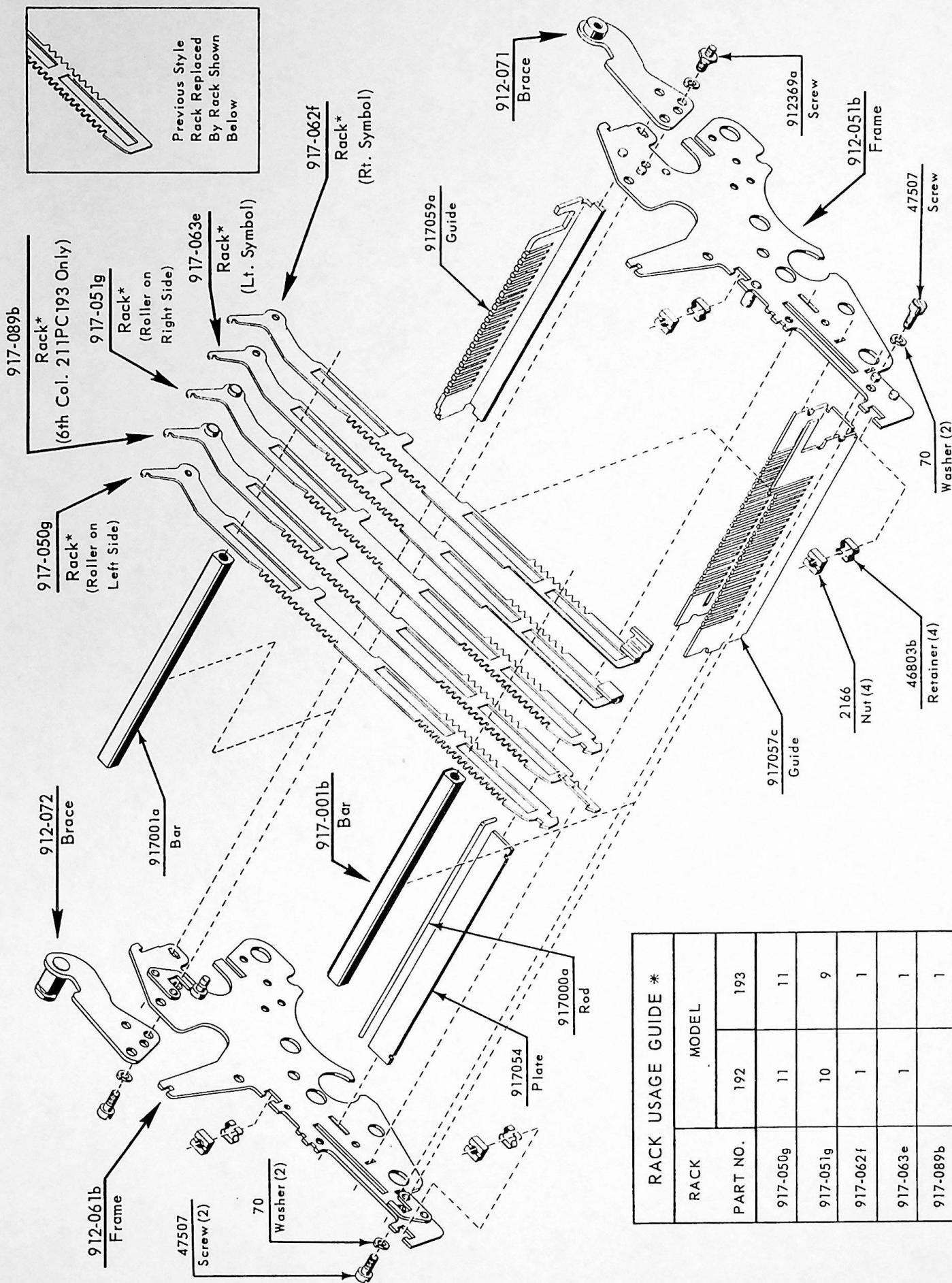


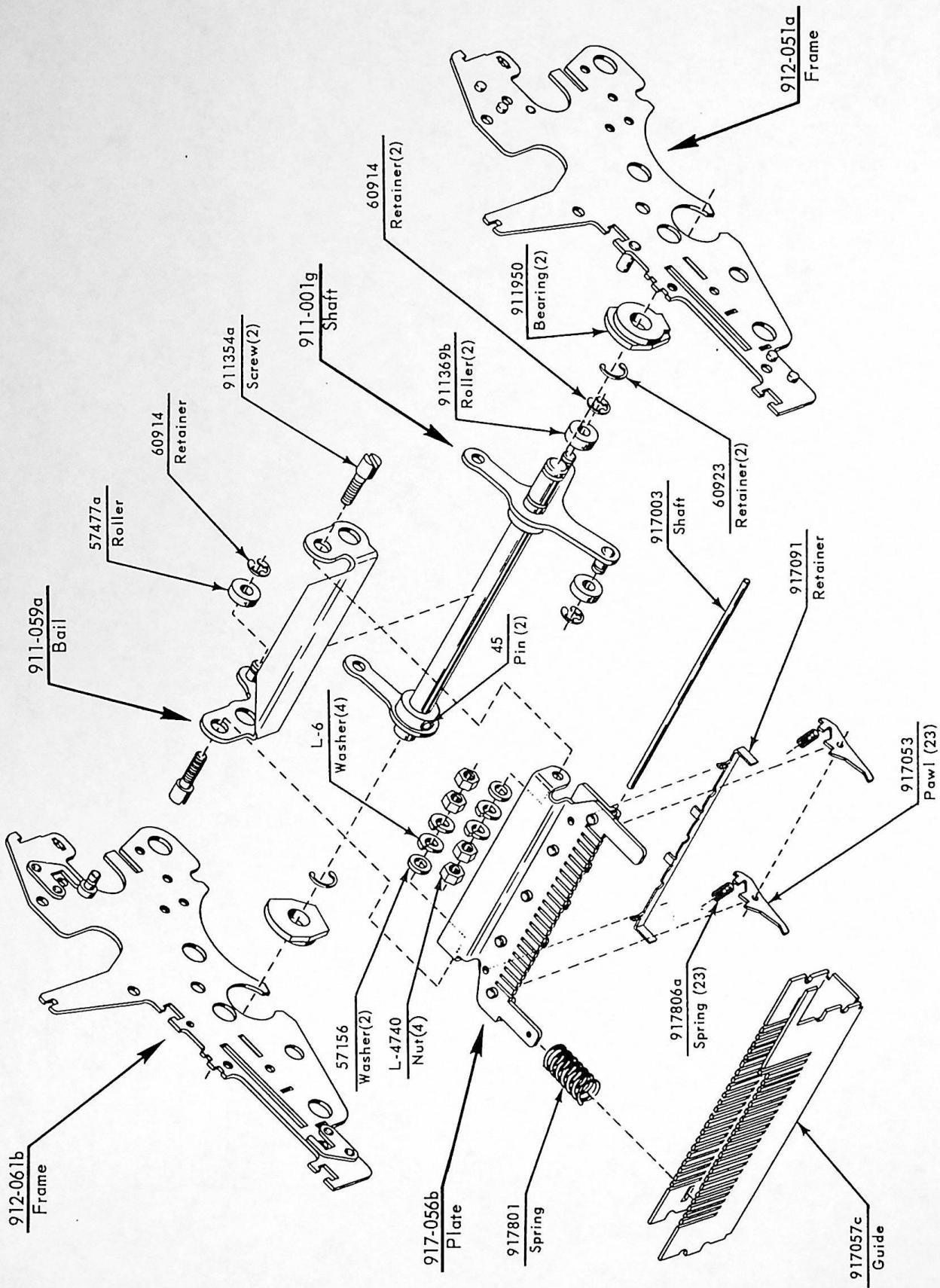




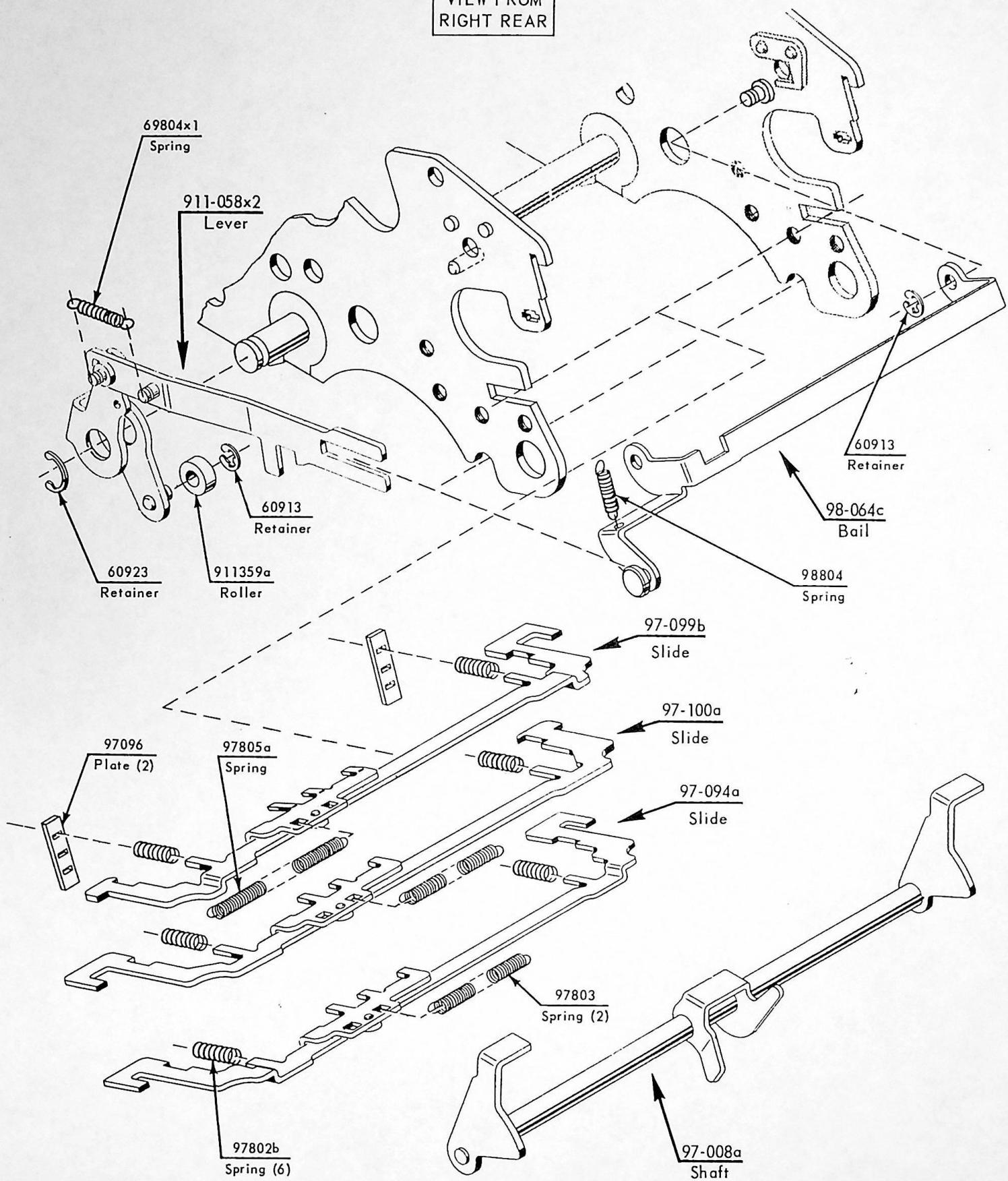


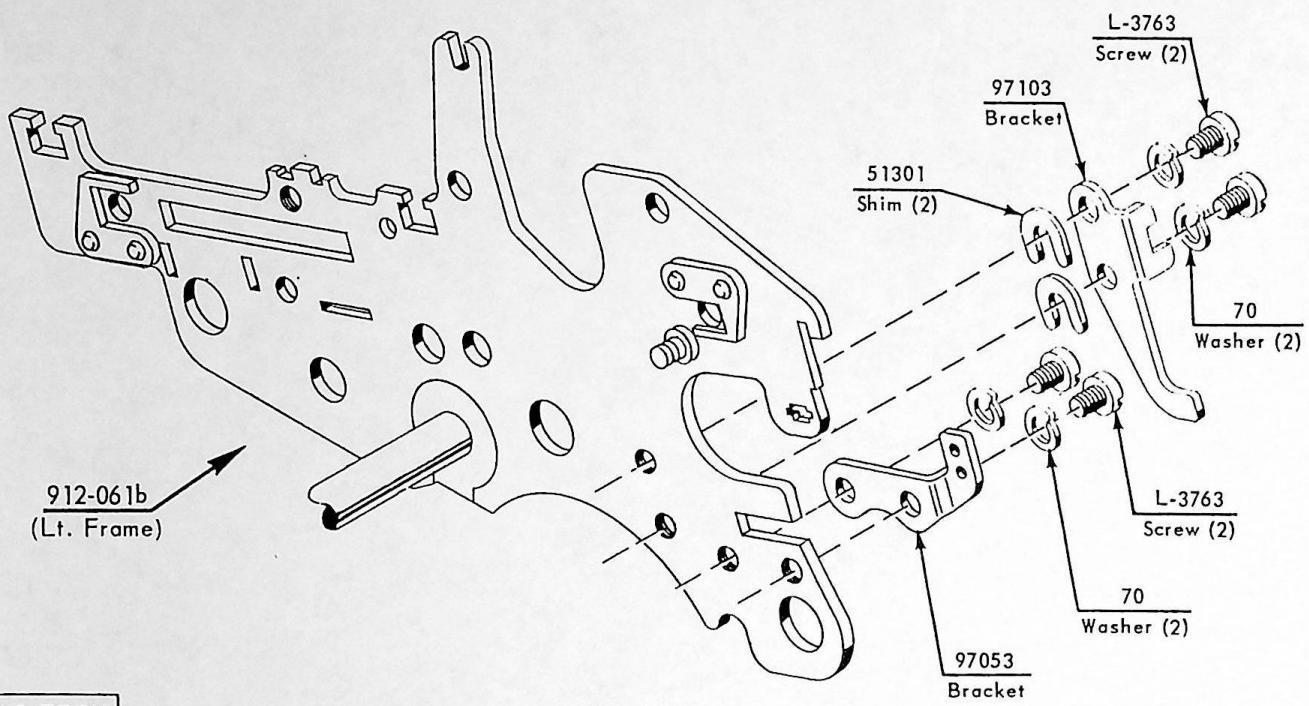




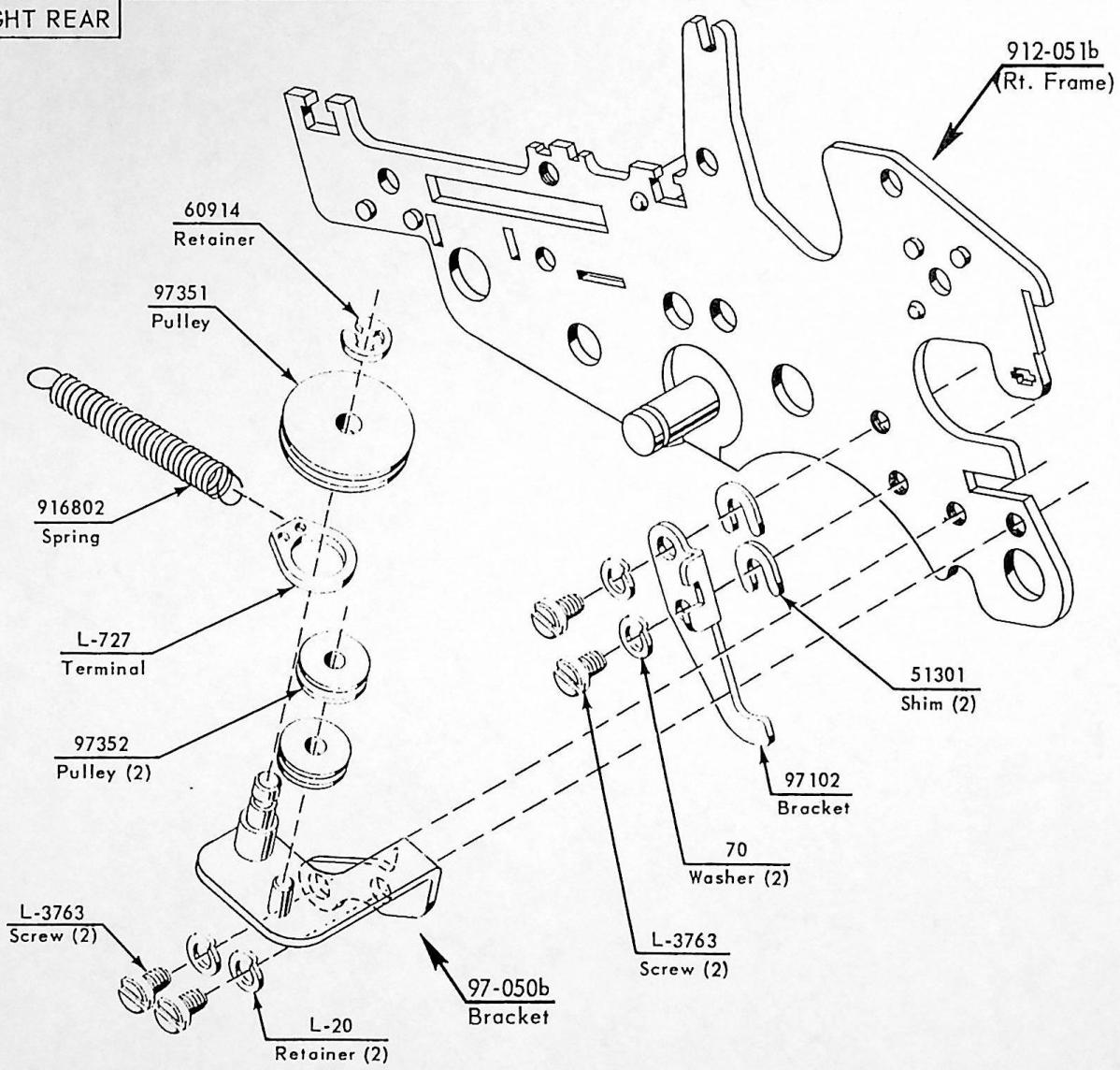


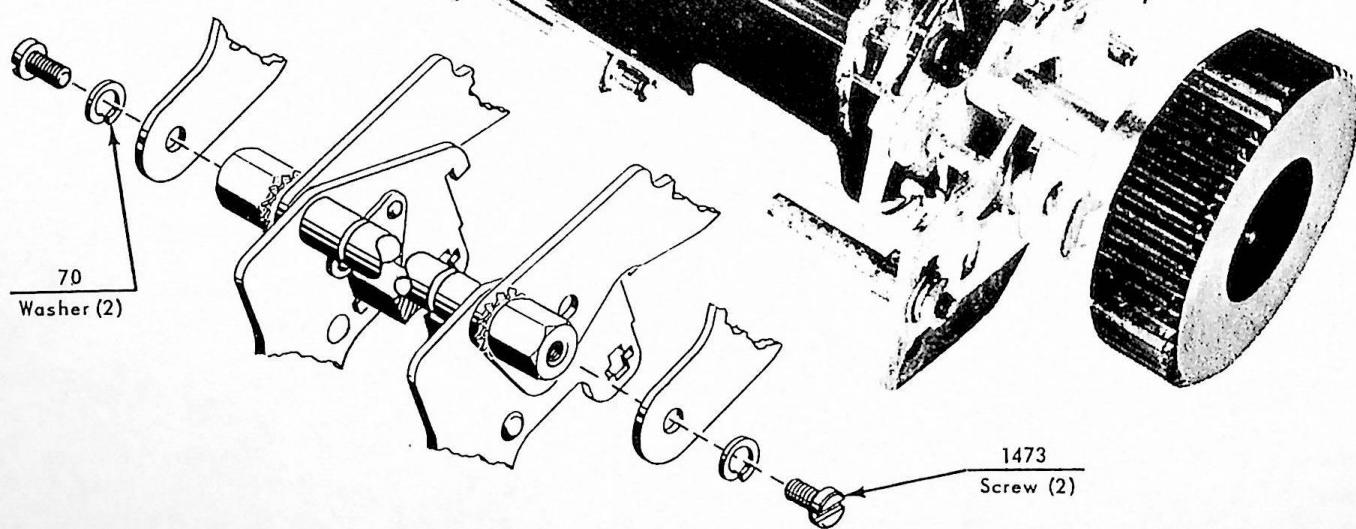
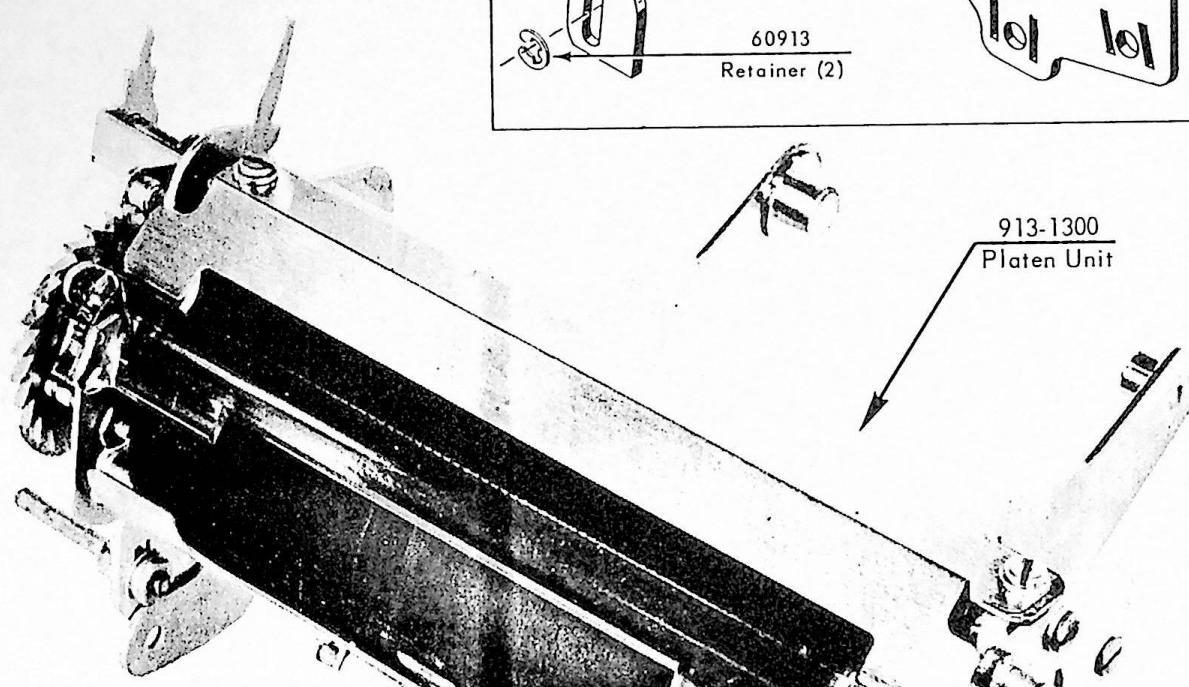
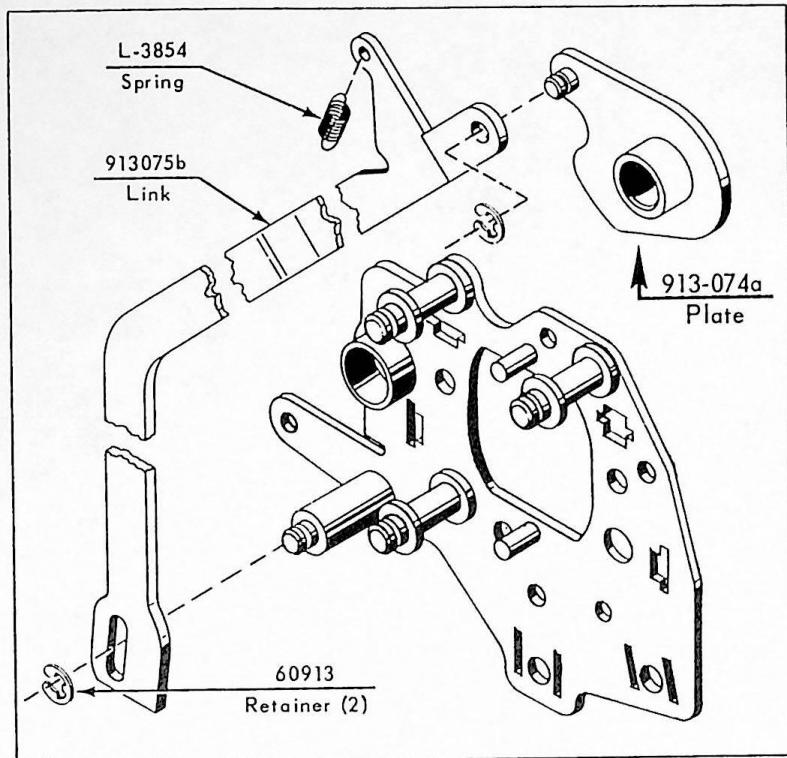
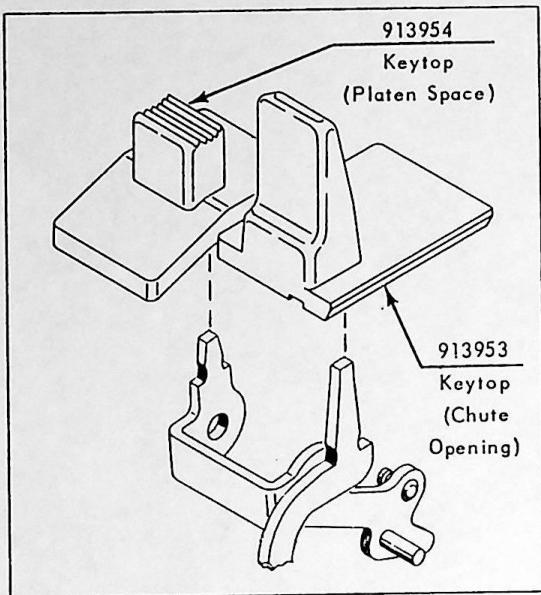
VIEW FROM  
RIGHT REAR

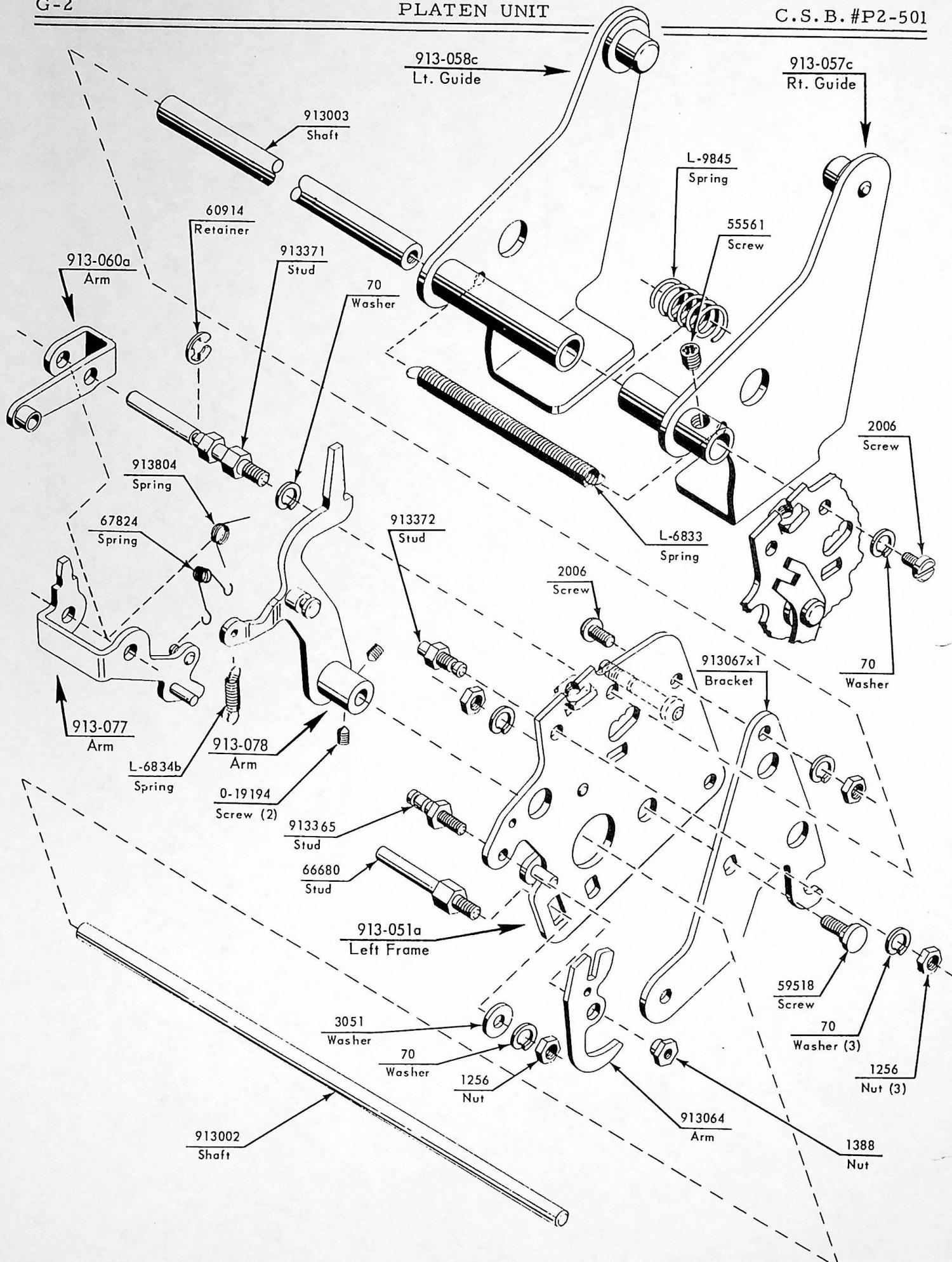


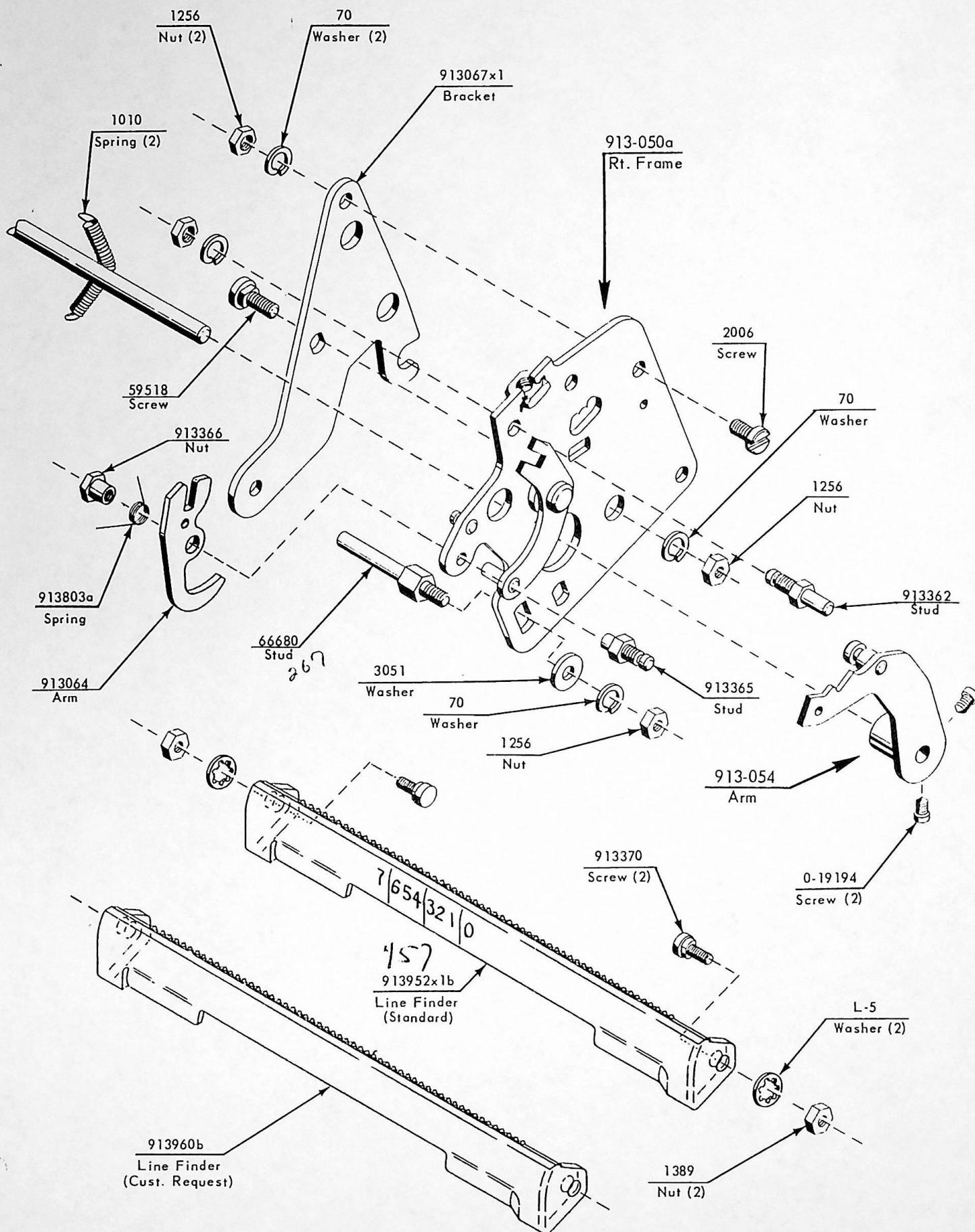


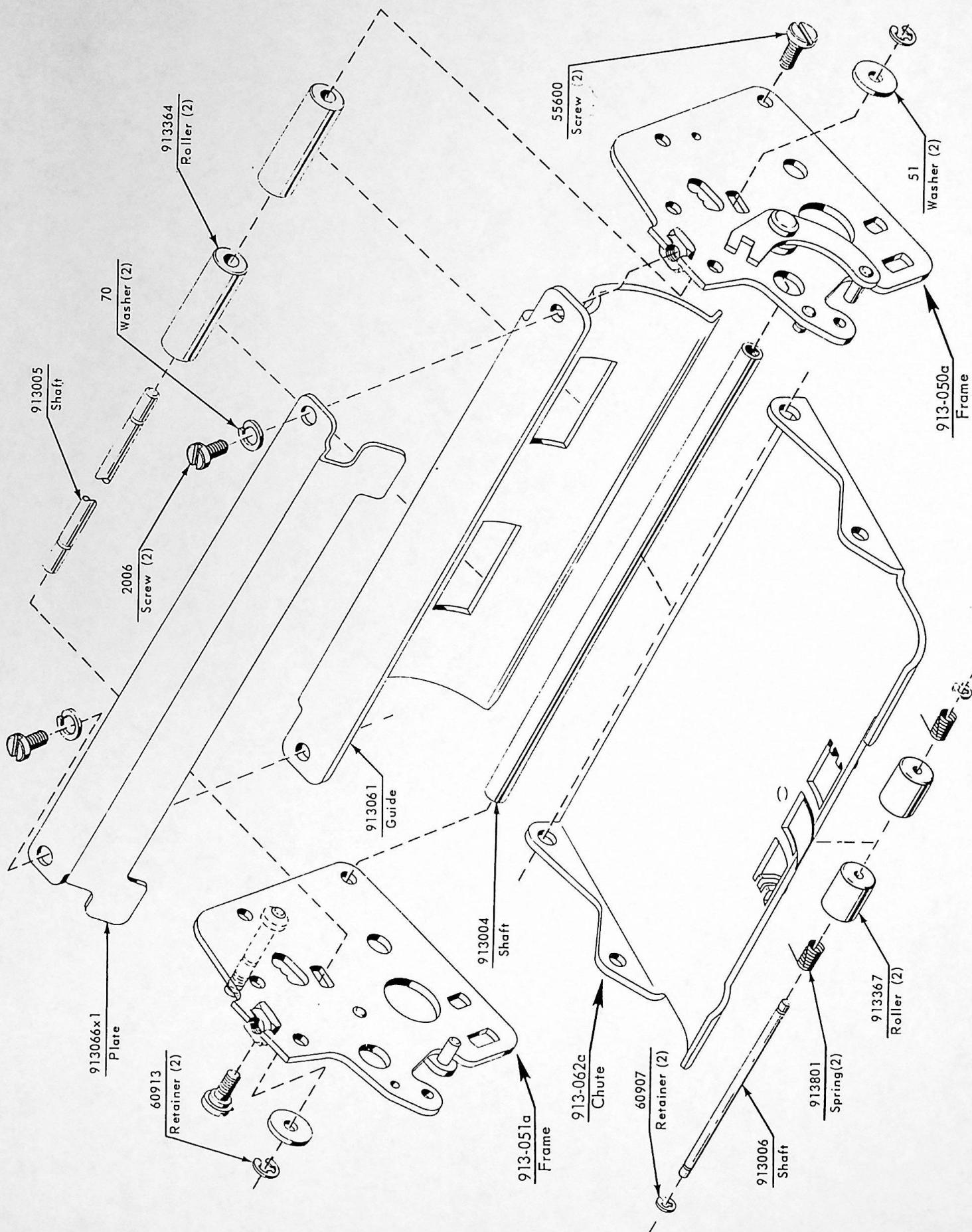
VIEWS FROM  
RIGHT REAR

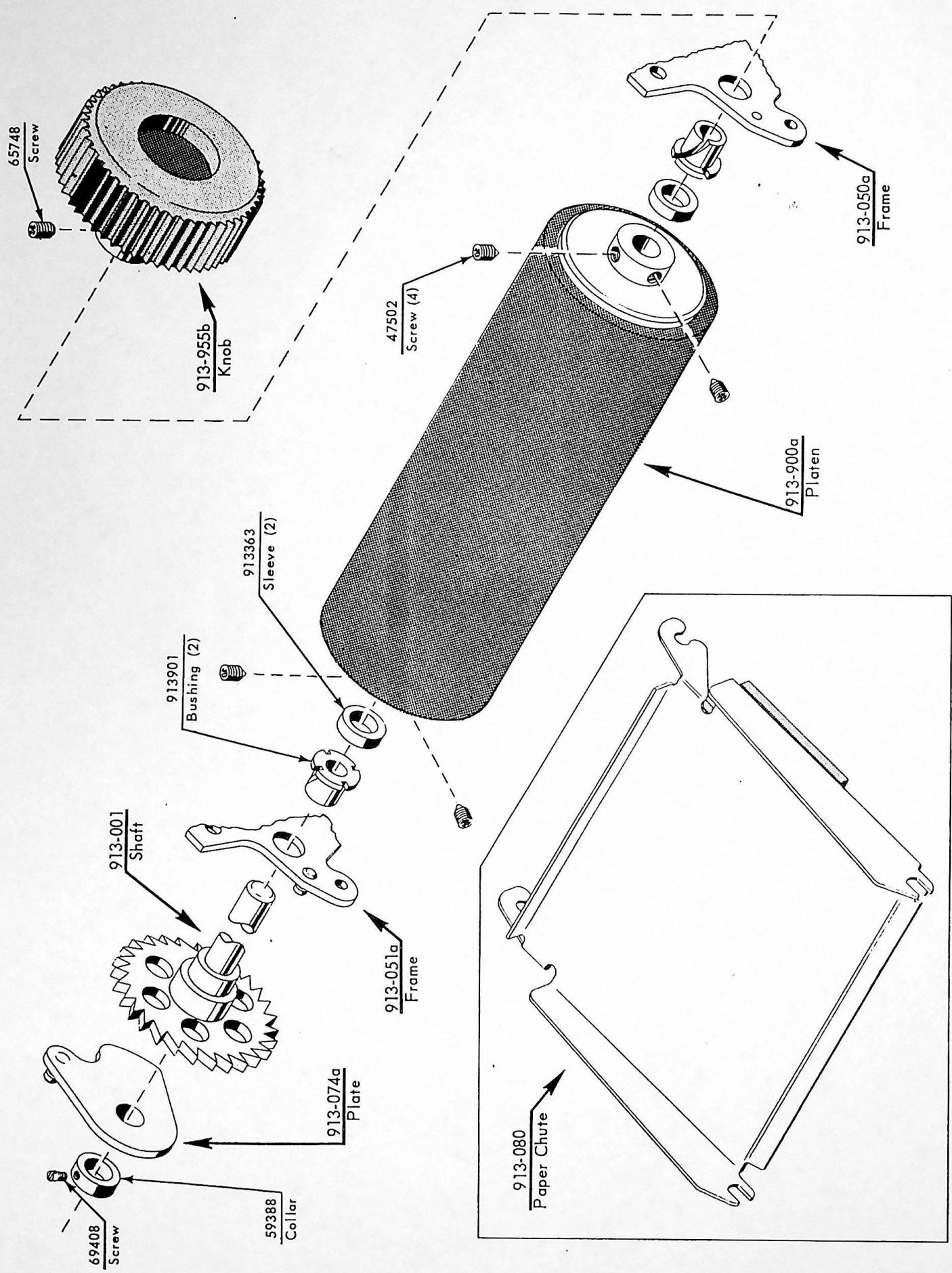


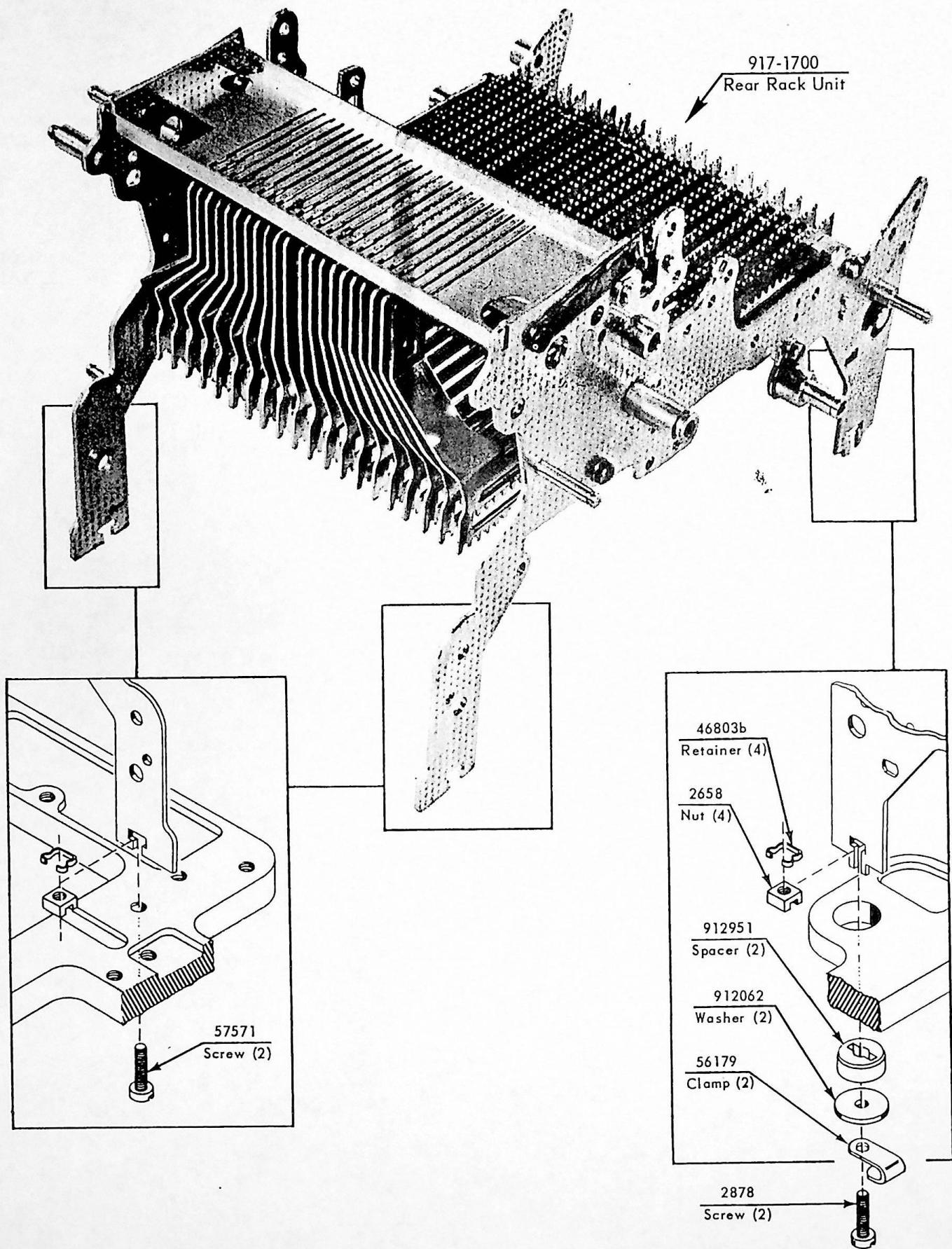


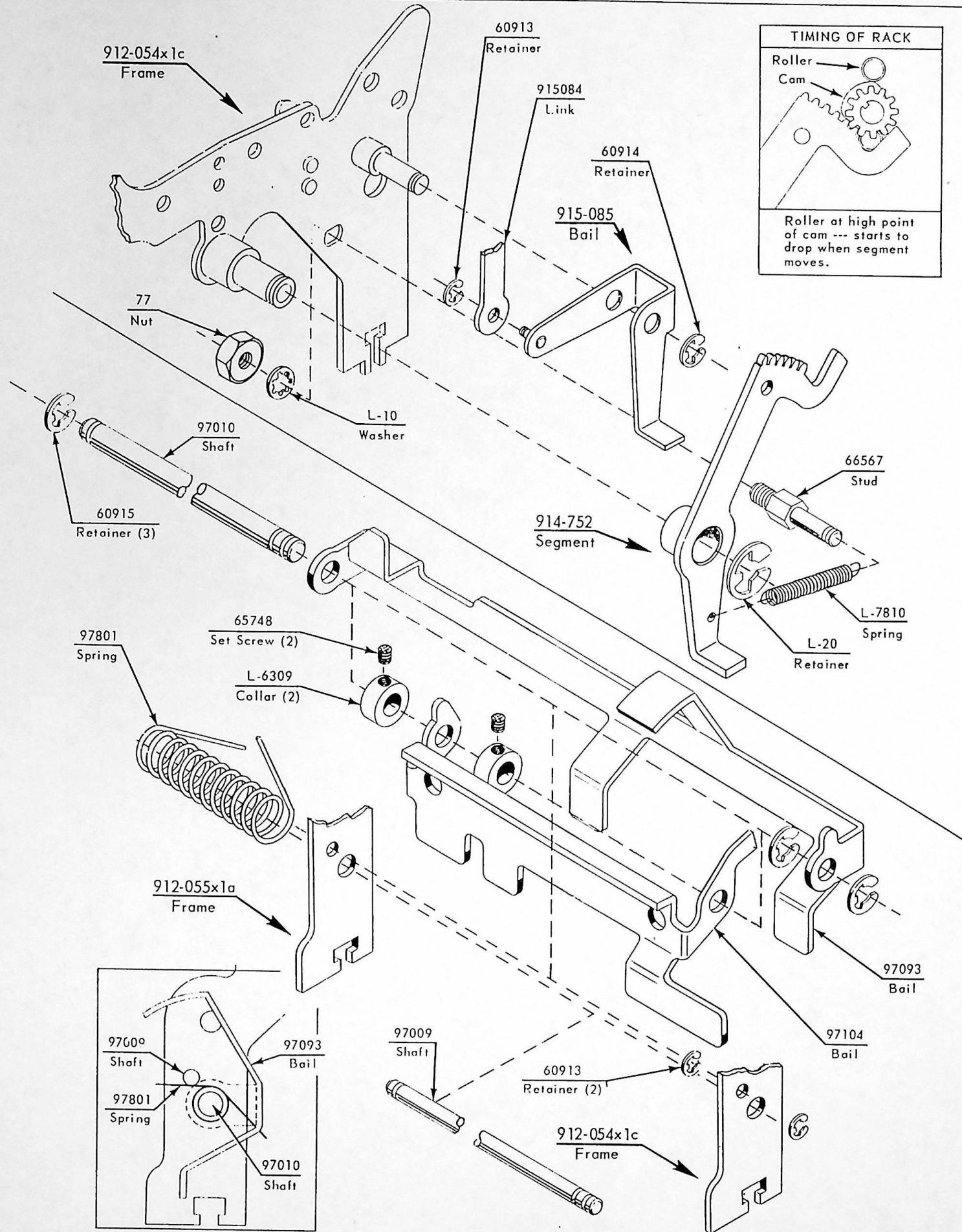


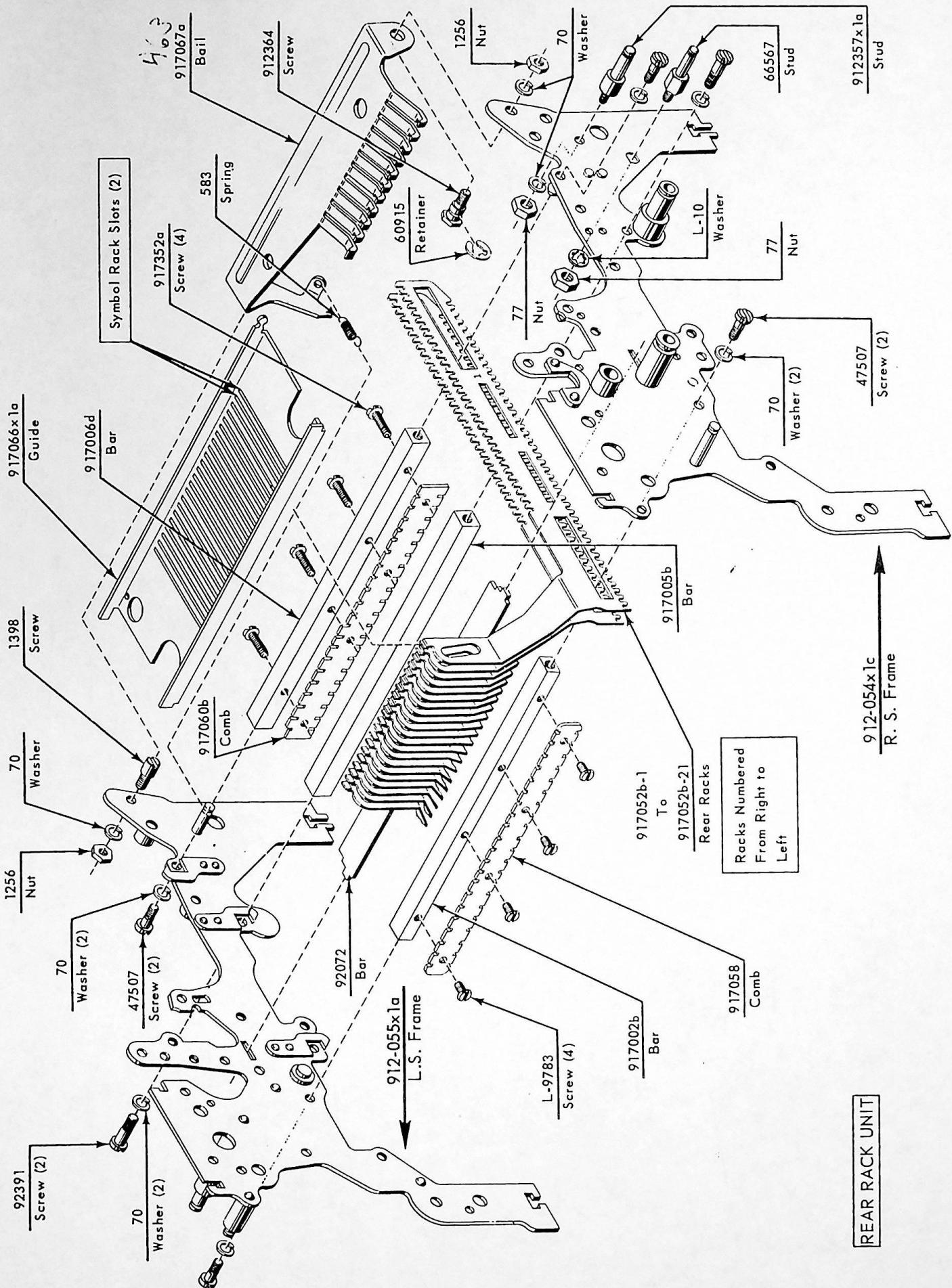


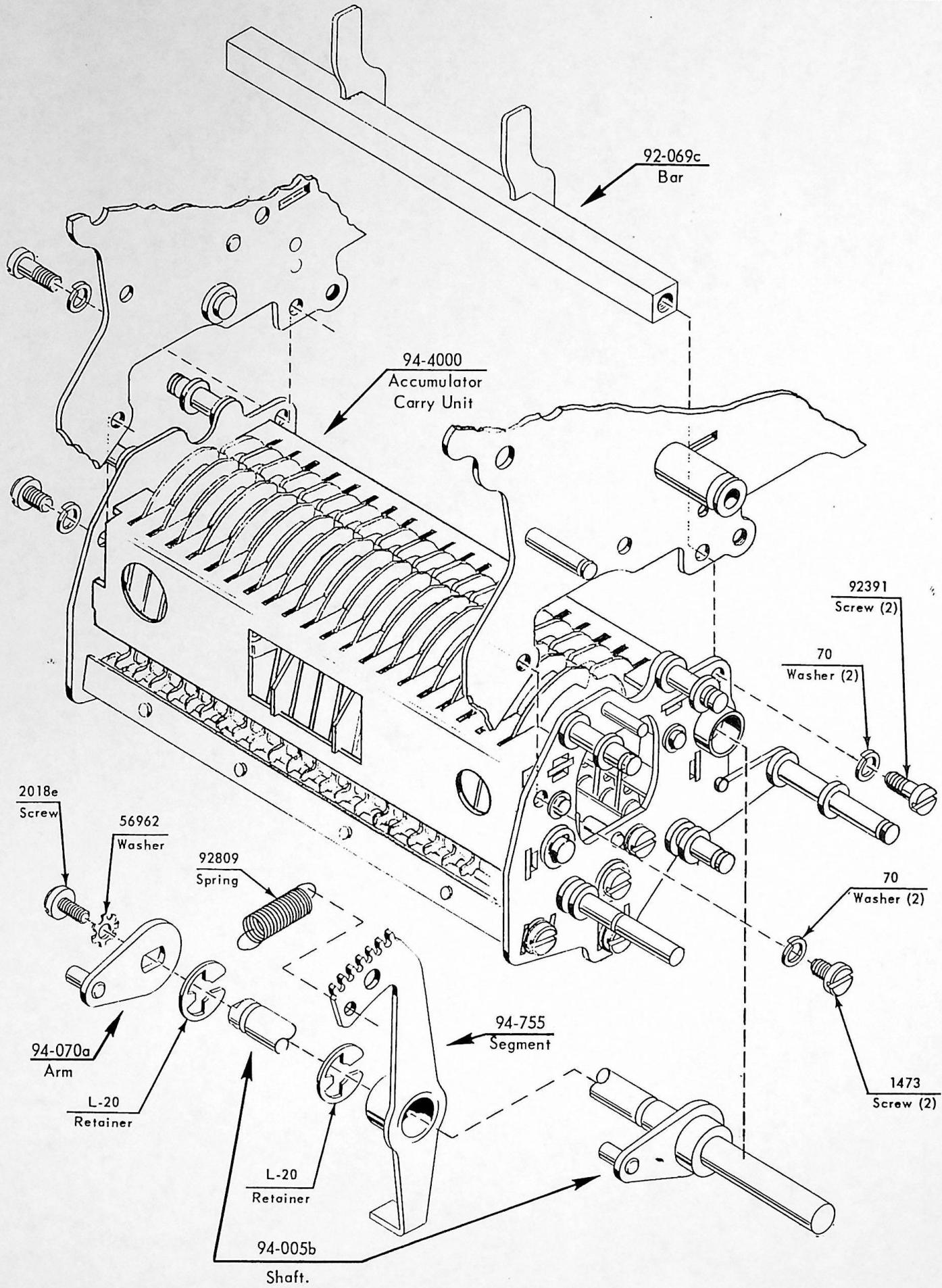


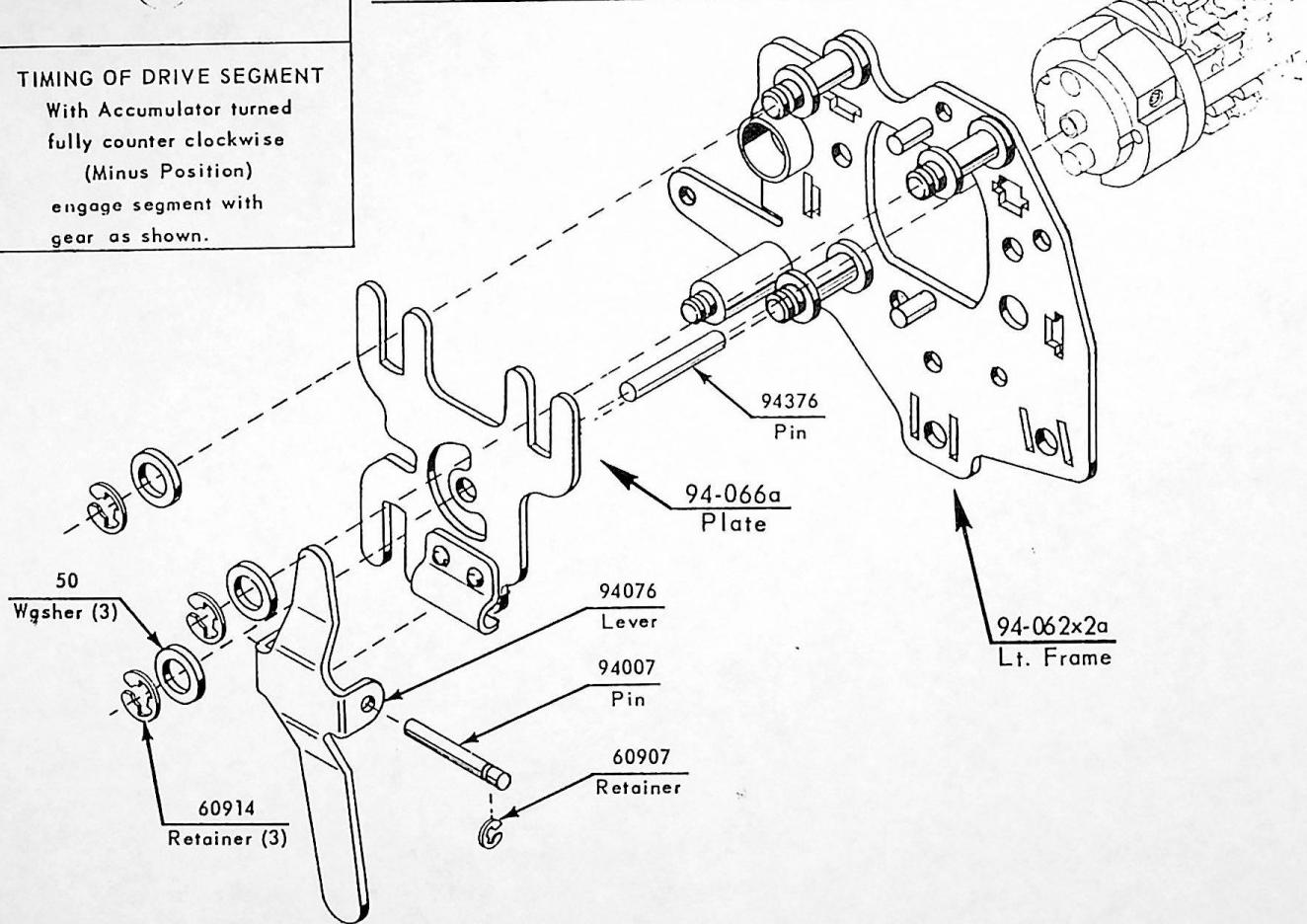
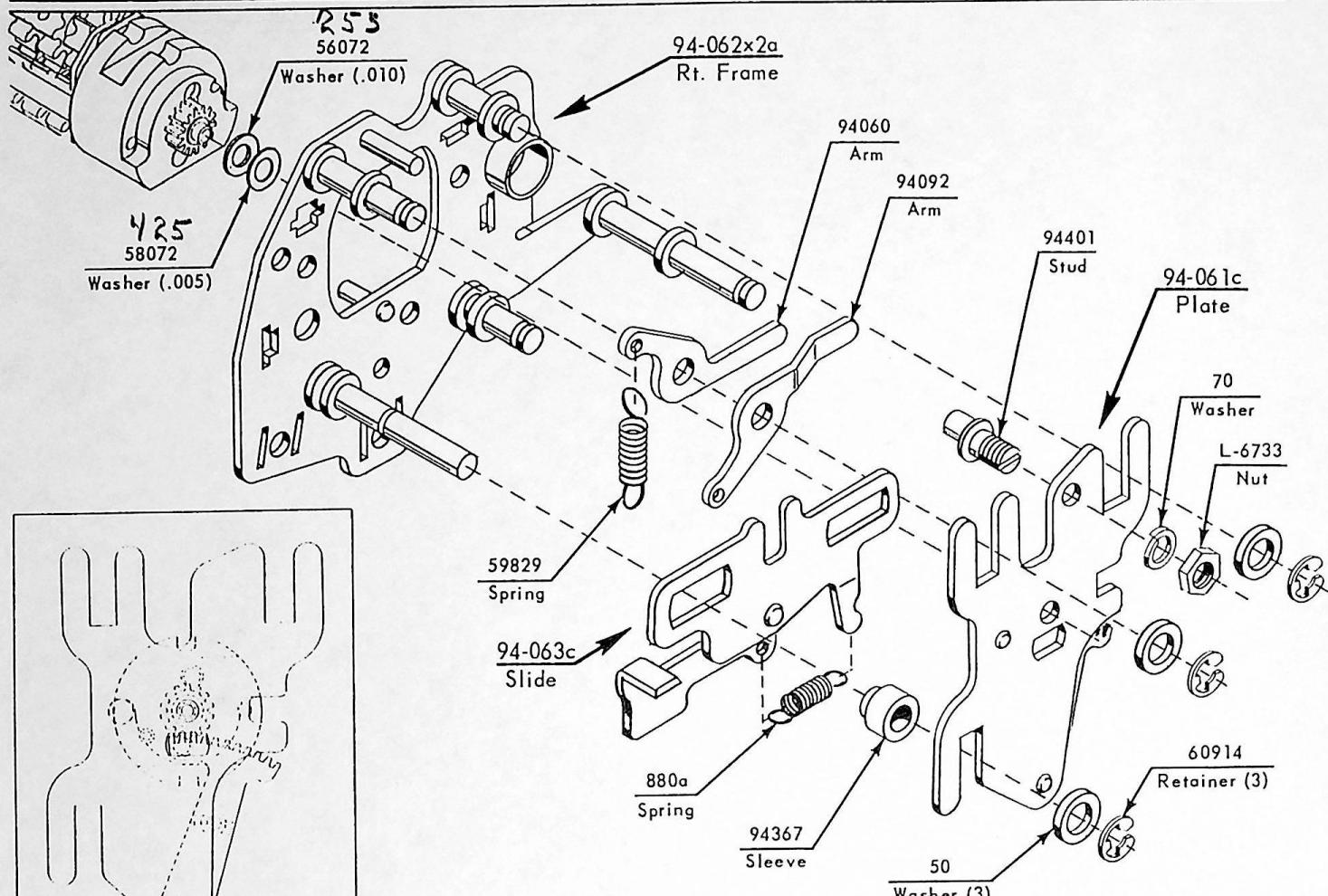


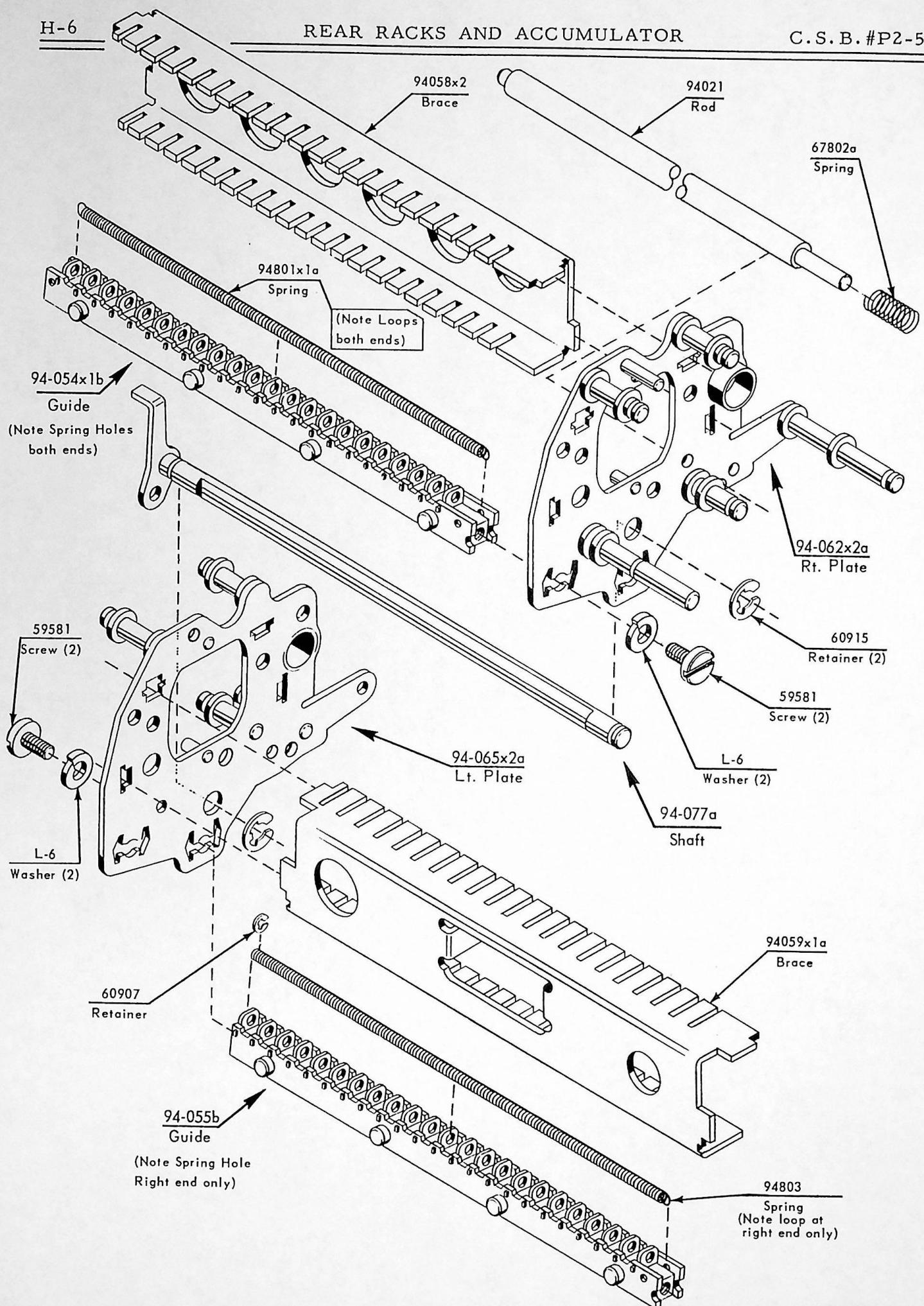


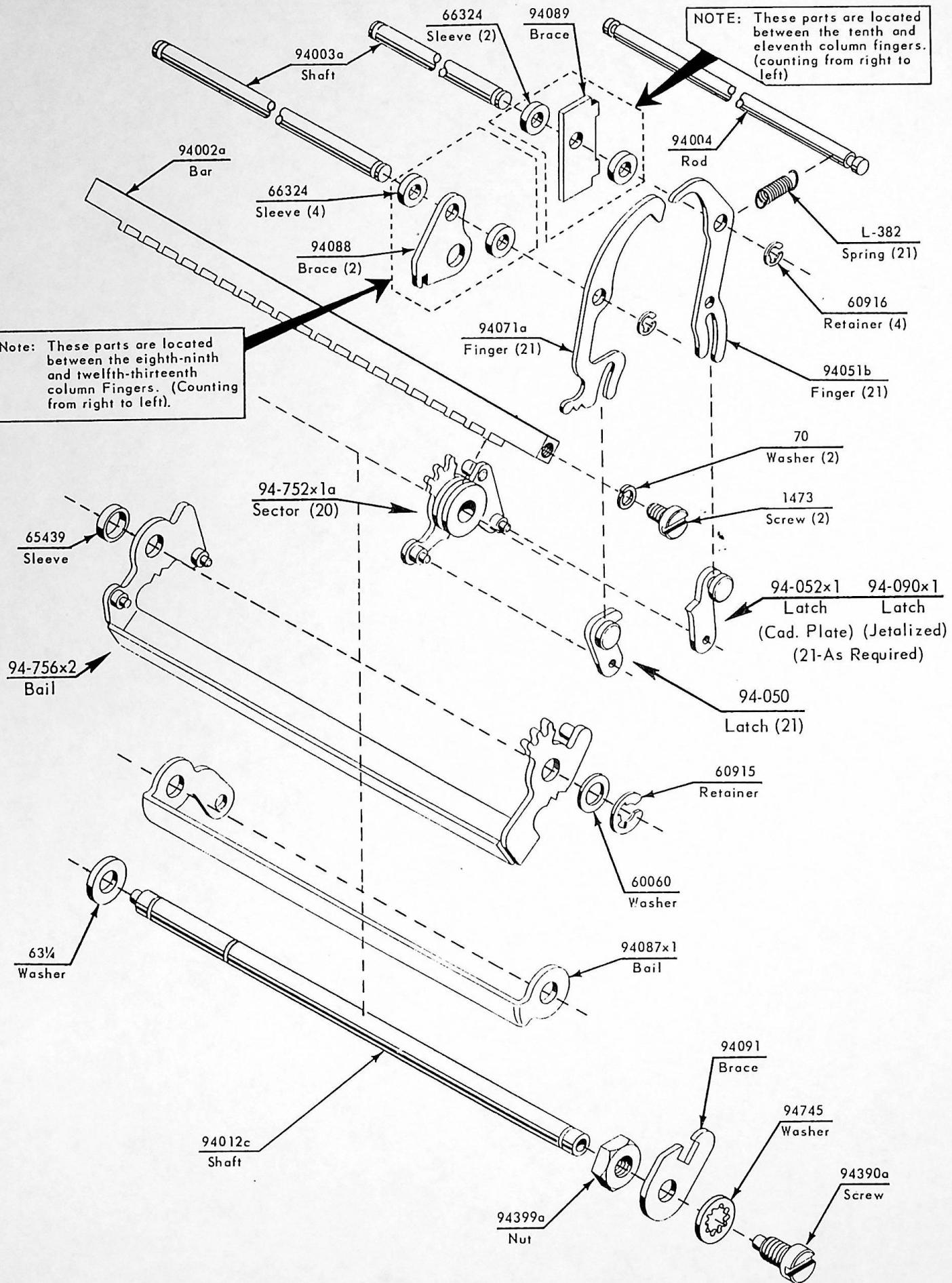


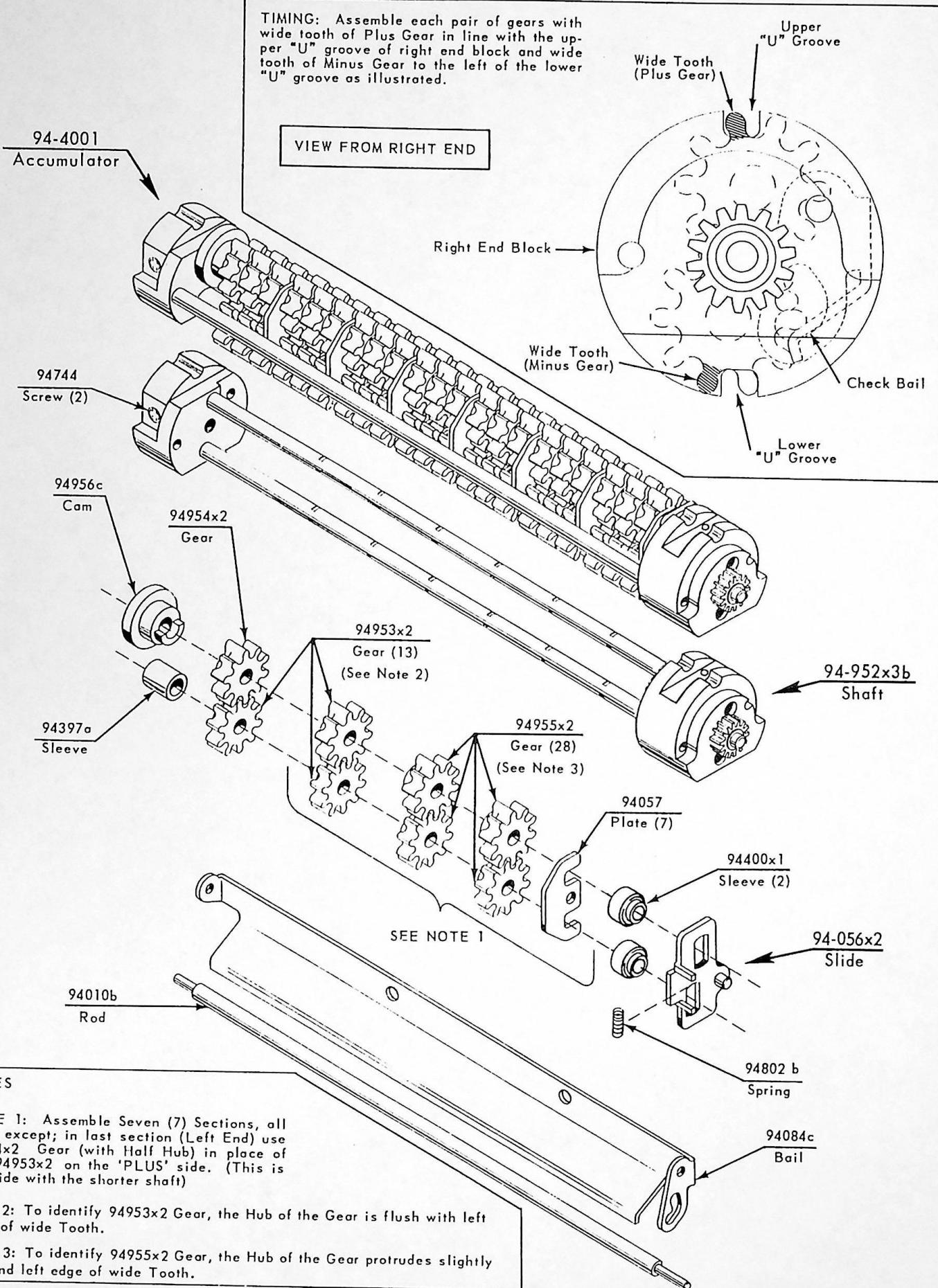


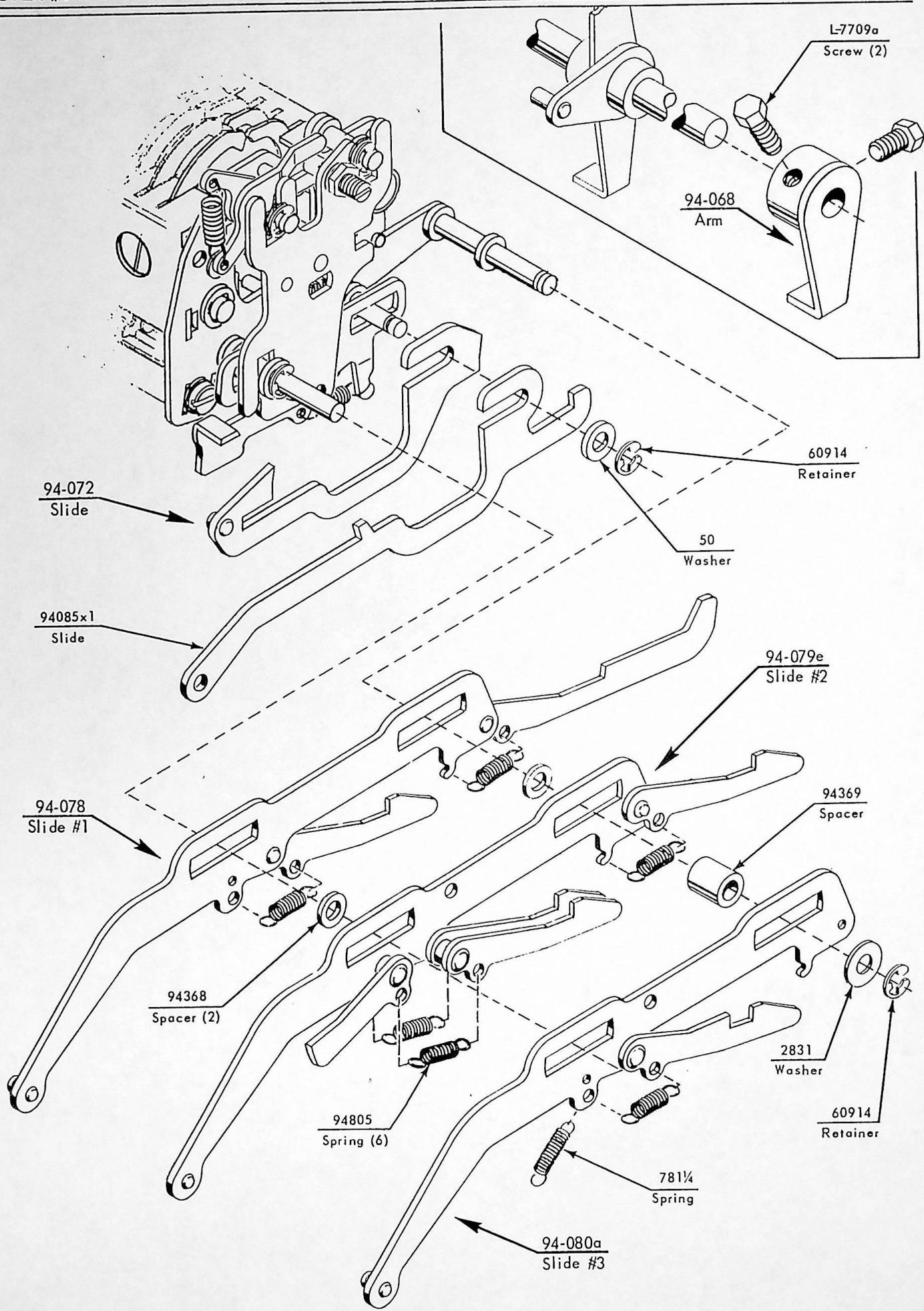


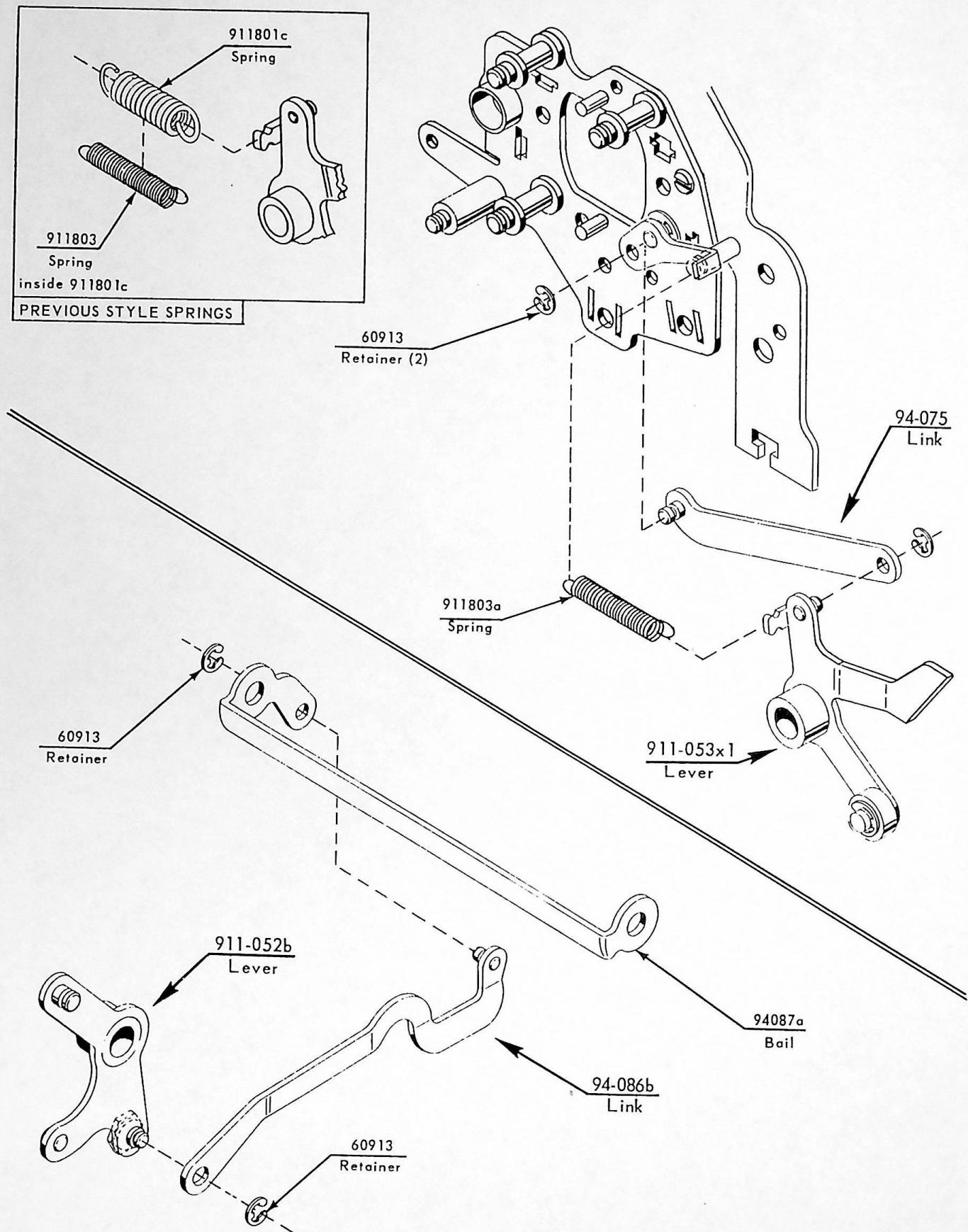








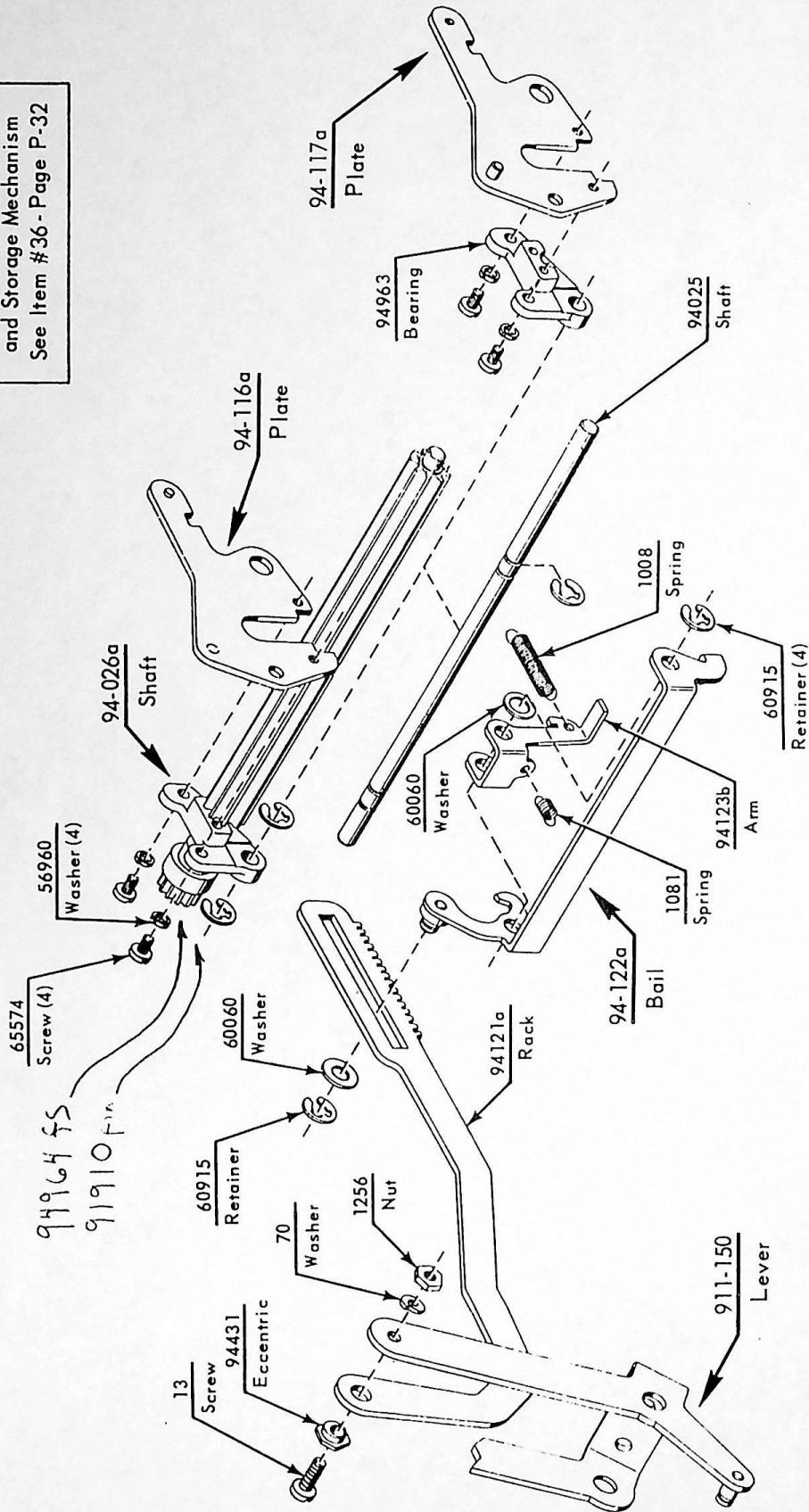




580 MODEL

Memory Entering  
and Storage Mechanism  
See Item #36 - Page P-32

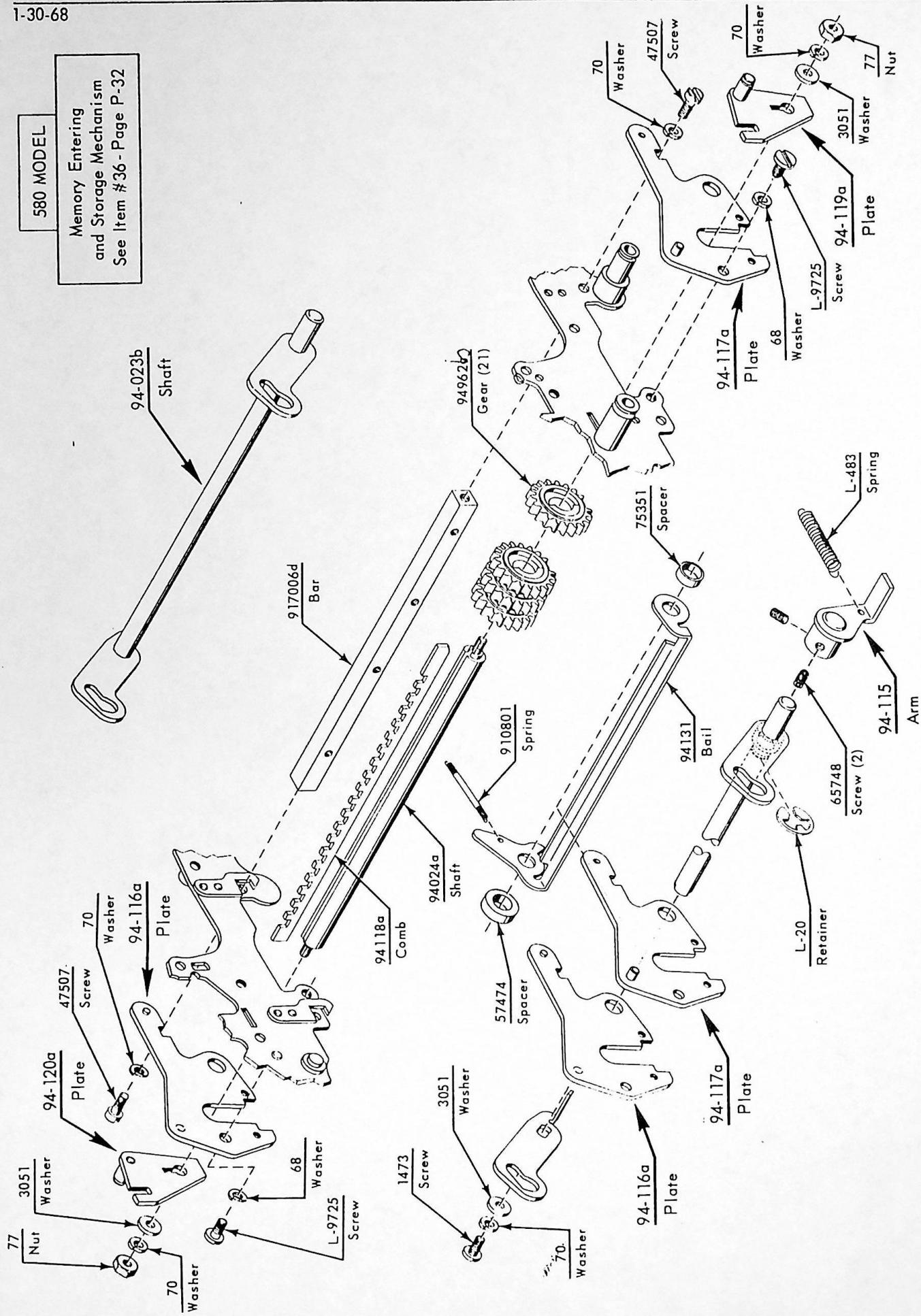
Memory clear shaft

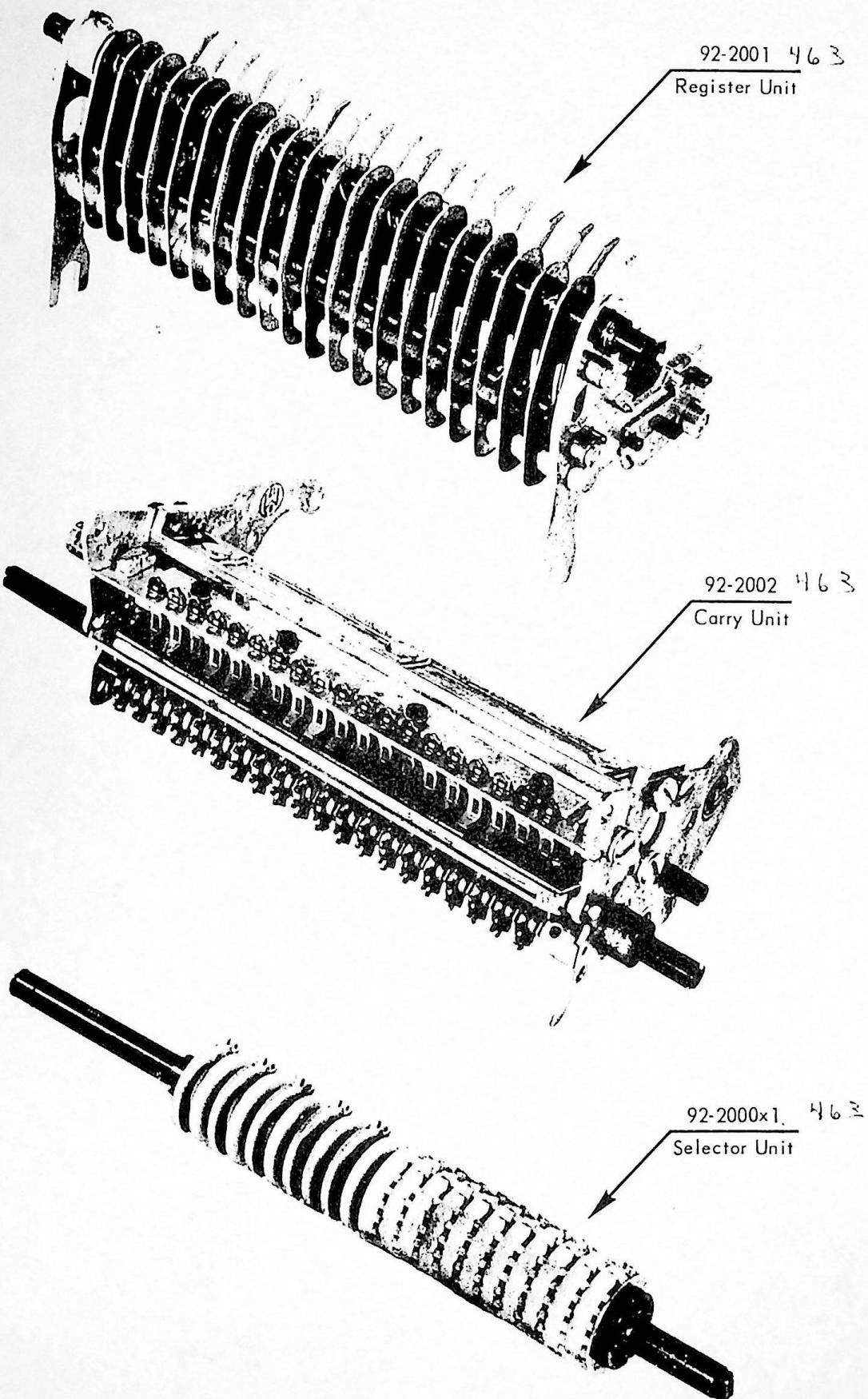


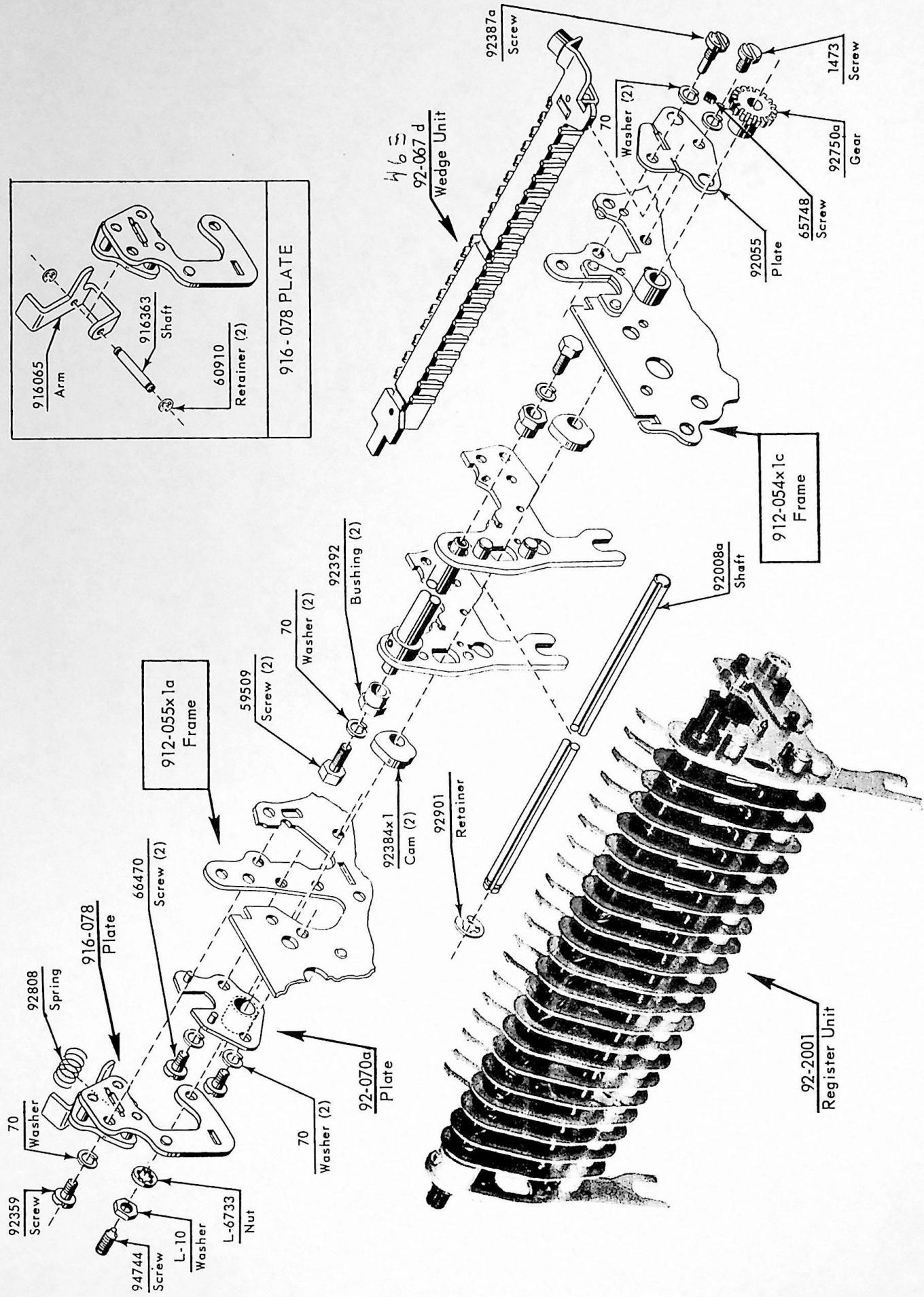
1-30-68

580 MODEL

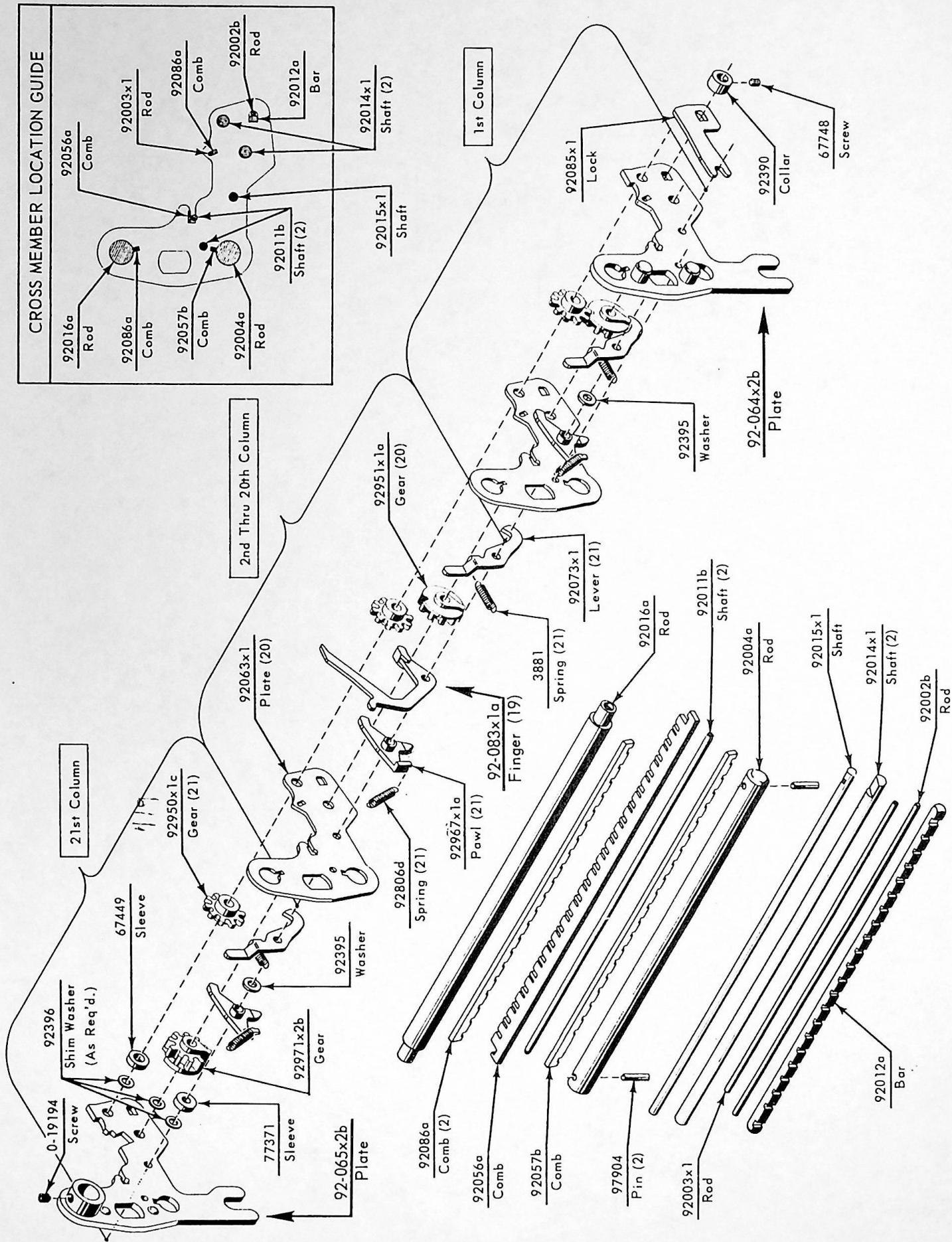
**Memory Entering  
and Storage Mechanism**  
**Item #36 - Page P-32**

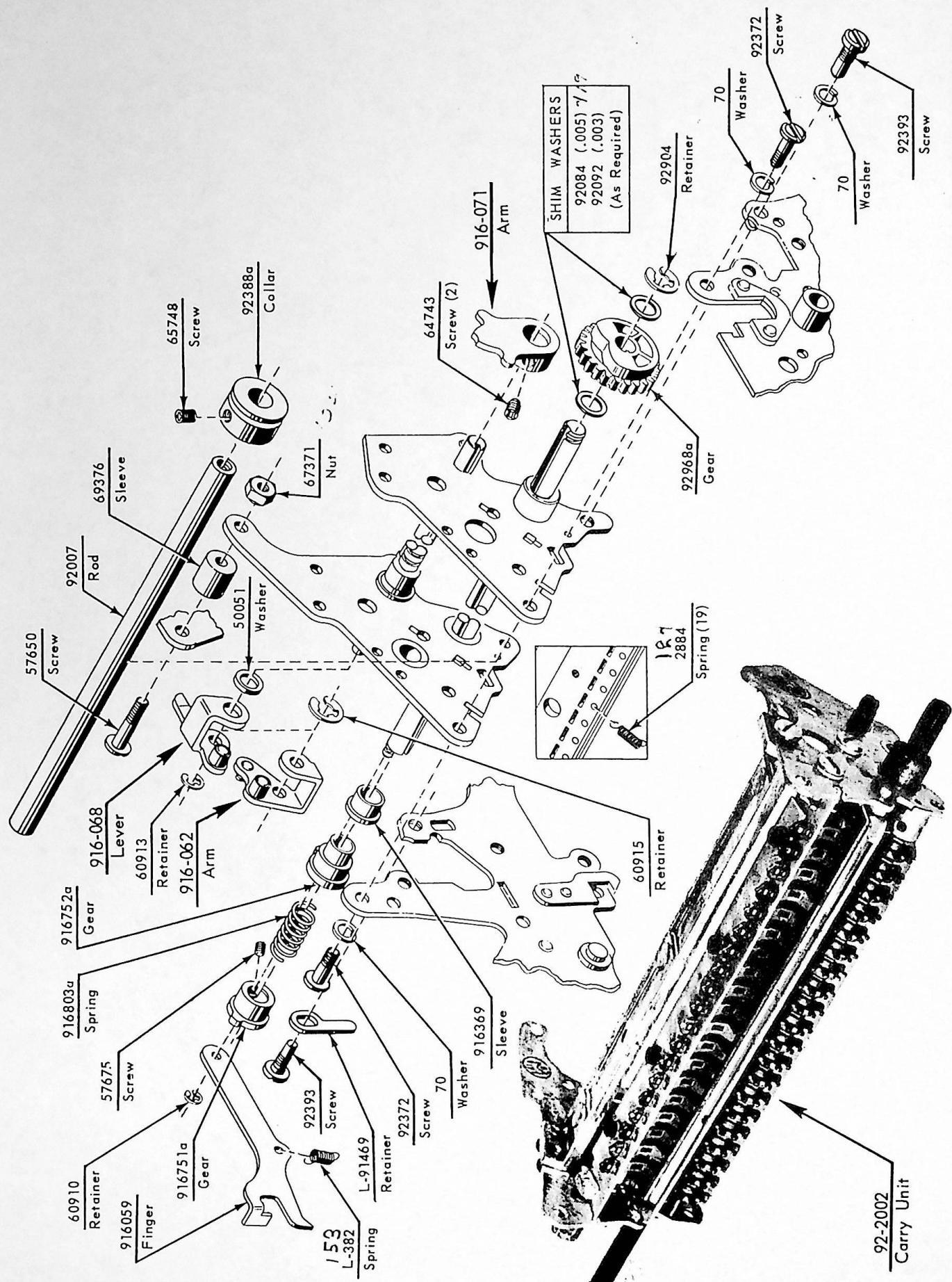


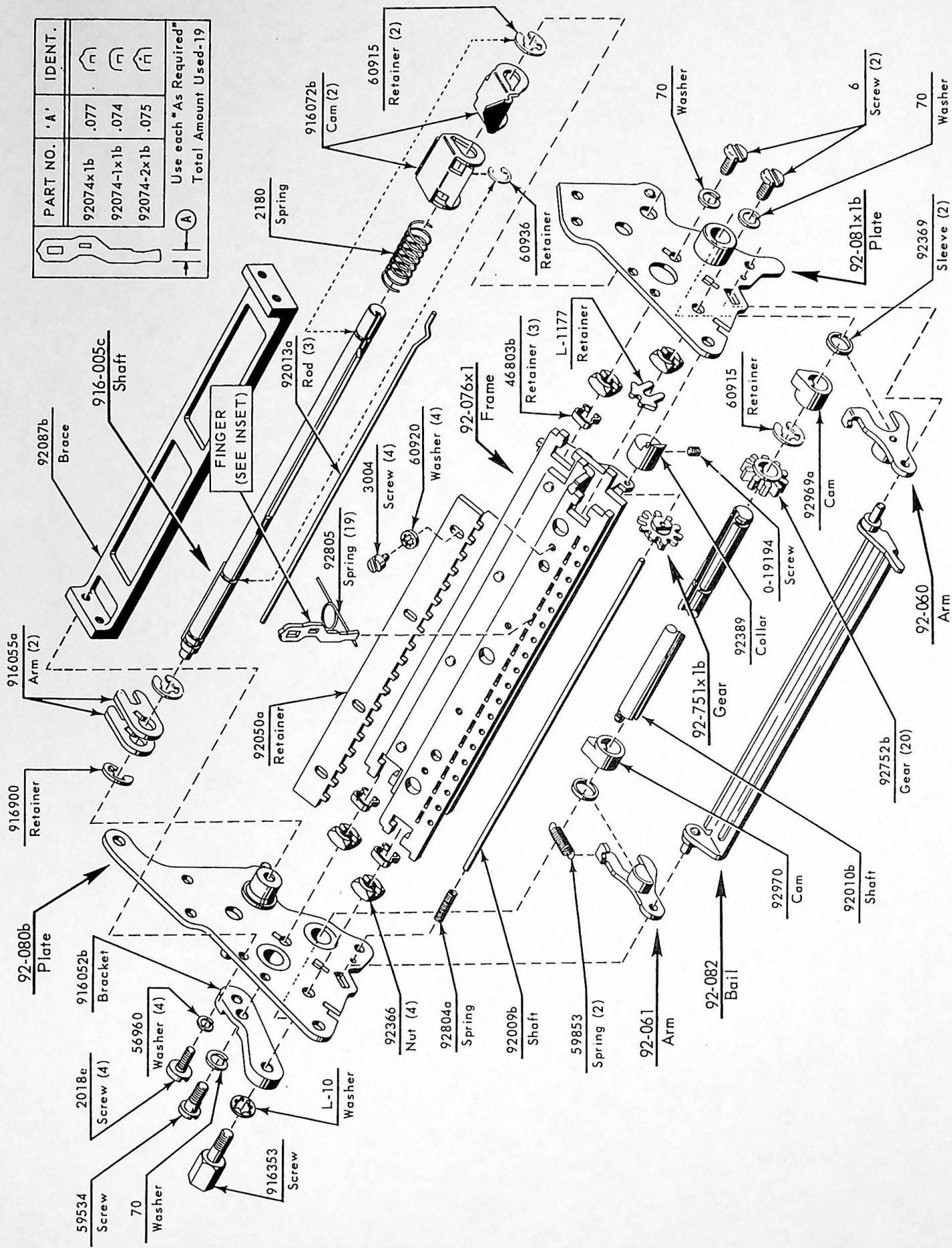


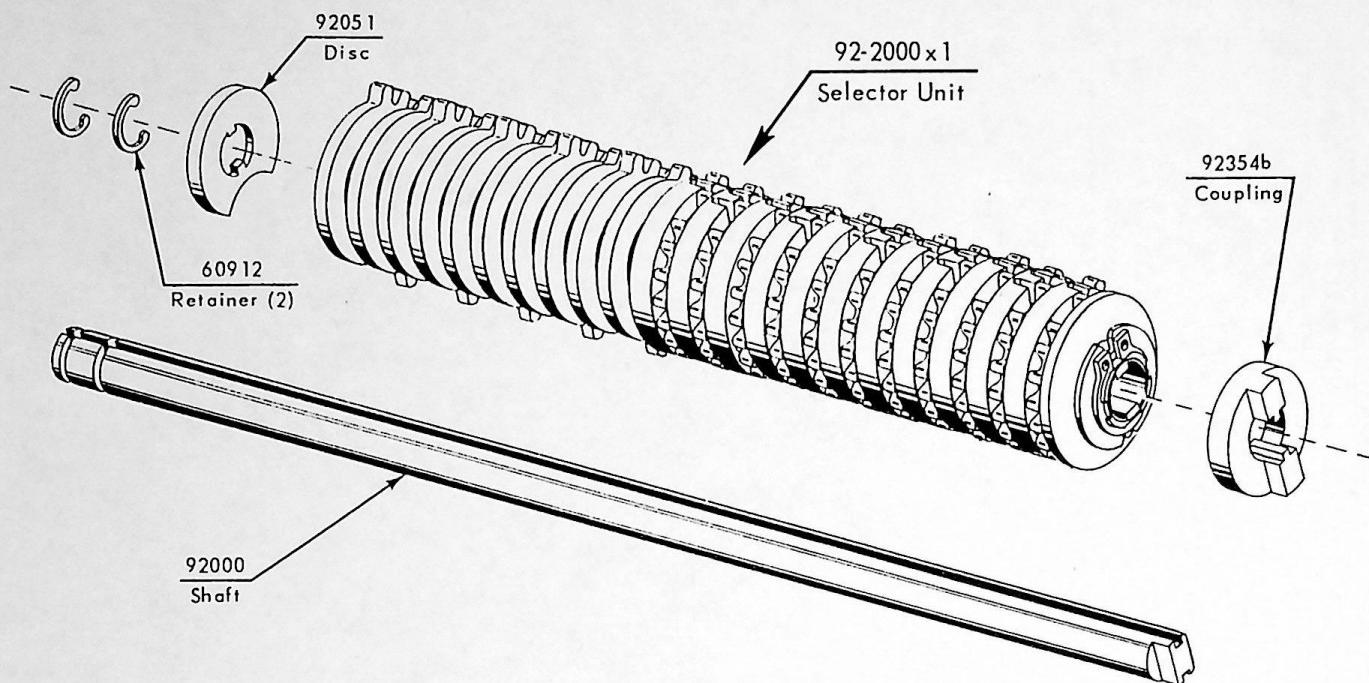


CROSS MEMBER LOCATION GUIDE









HOUSING IDENTIFICATION AND TOOTH LOCATION		
NOTE: Keyway centerline thru area between Teeth		NOTE: Keyway centerline thru Tooth
92959b Tooth (9) 92960a Filler (1)	92959b Tooth (9) 92960a Filler (1)	92959b Tooth (10) (1st Column only)
92956b "B" Housing		92955b "A" Housing

92960a Filler Tooth	FIXED GEAR IDENTIFICATION	
	NOTE: Keyway centerline thru area between Teeth	NOTE: Keyway centerline thru Tooth
92959b Setable Tooth	92963x1 (5) "C" Gear	92964x1 (5) "D" Gear

# **discontinued assembly notice no. 8**

**MONROE--A DIVISION OF LITTON INDUSTRIES' SERVICE OPERATIONS DEPARTMENT \* ORANGE, NEW JERSEY \* PRINTED IN U.S.A.  
THE INFORMATION CONTAINED IN THIS NOTIFICATION IS THE CONFIDENTIAL PROPERTY OF  
MONROE DIVISION, LITTON BUSINESS SYSTEMS, INC.**

**Date: October 24, 1969**

**Effective immediately, the following described assembly/s will no longer be available on requisition from Orange.**

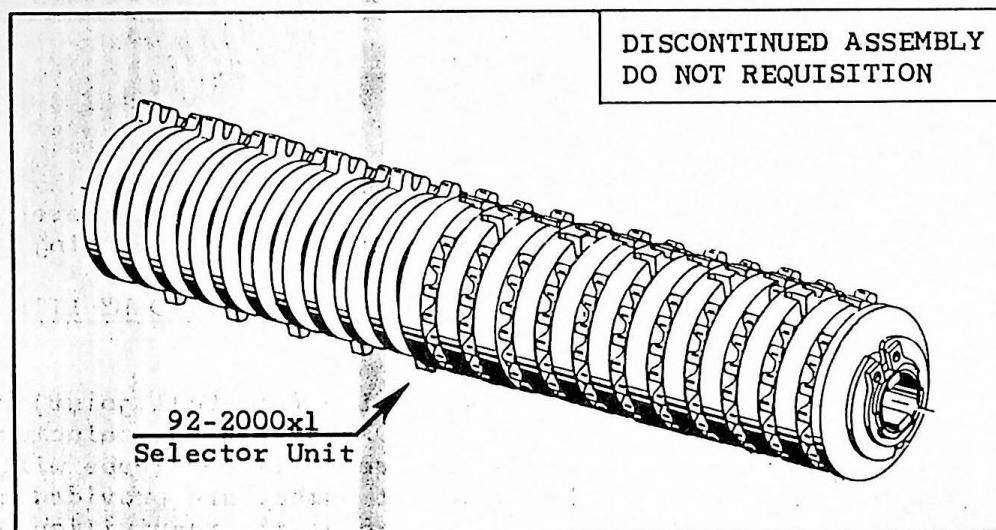
**Branch offices should order required piece parts or sub-assemblies and repair such units locally.**

**Please update your copy of the Master Price Catalog by marking the following assembly numbers "DISCONTINUED".**

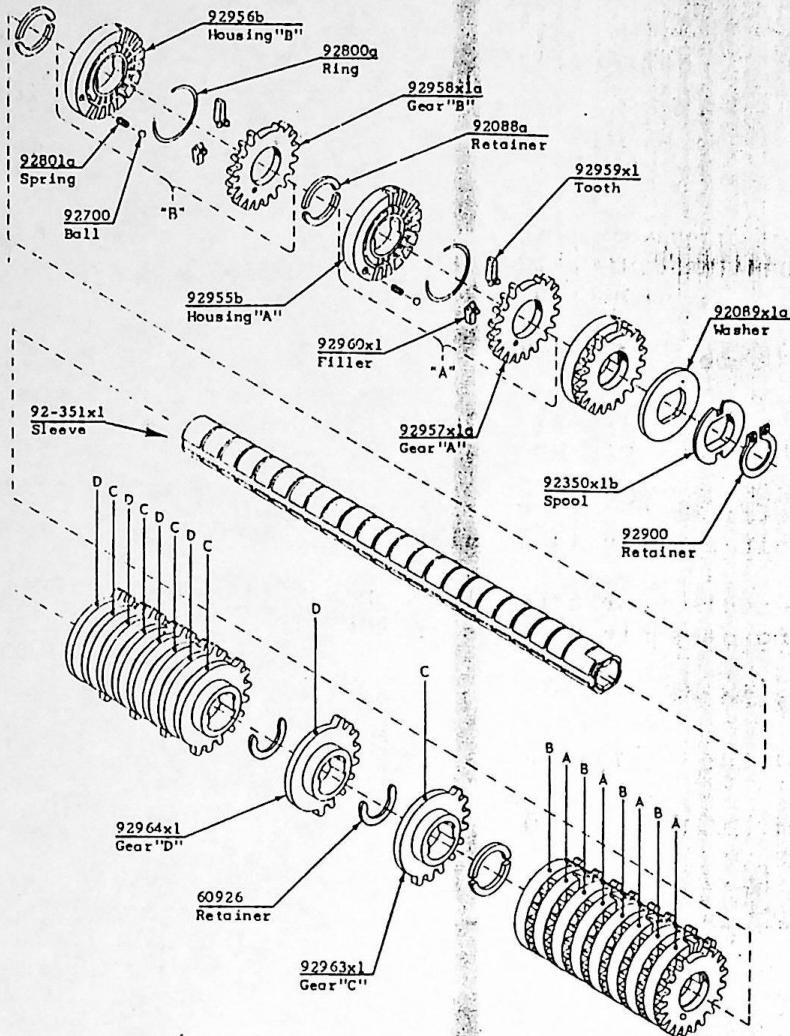
**Assembly No./s: 92-2000xl**

**Description: Selector**

**Model/s: PC-1421 & 580**



**Repair parts illustrated on reverse side will remain available.**



#### FIELD REBUILDING OF SELECTORS

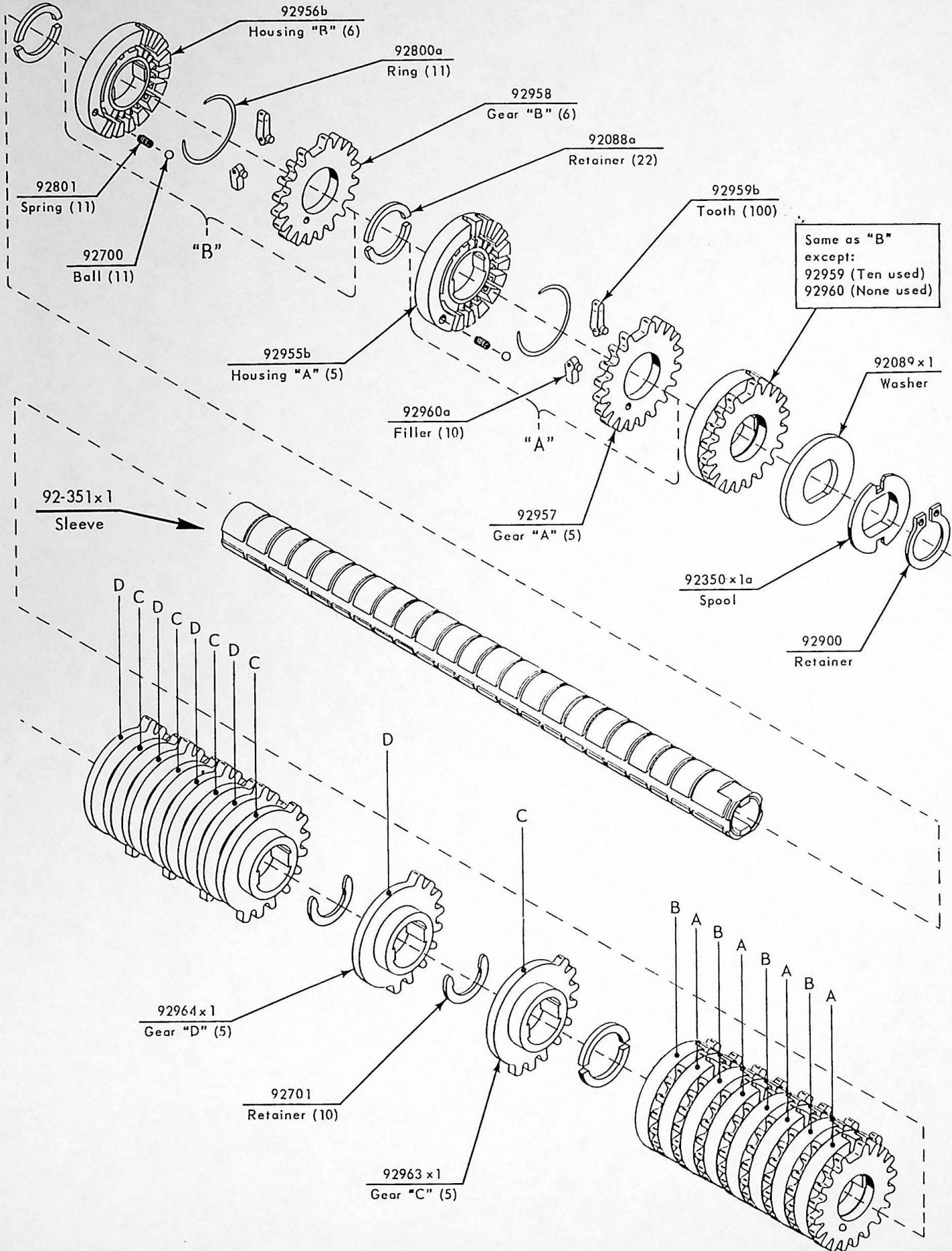
Zoning tolerances of selector assemblies are critical, therefore, special care should be exercised when disassembling and reassembling selectors.

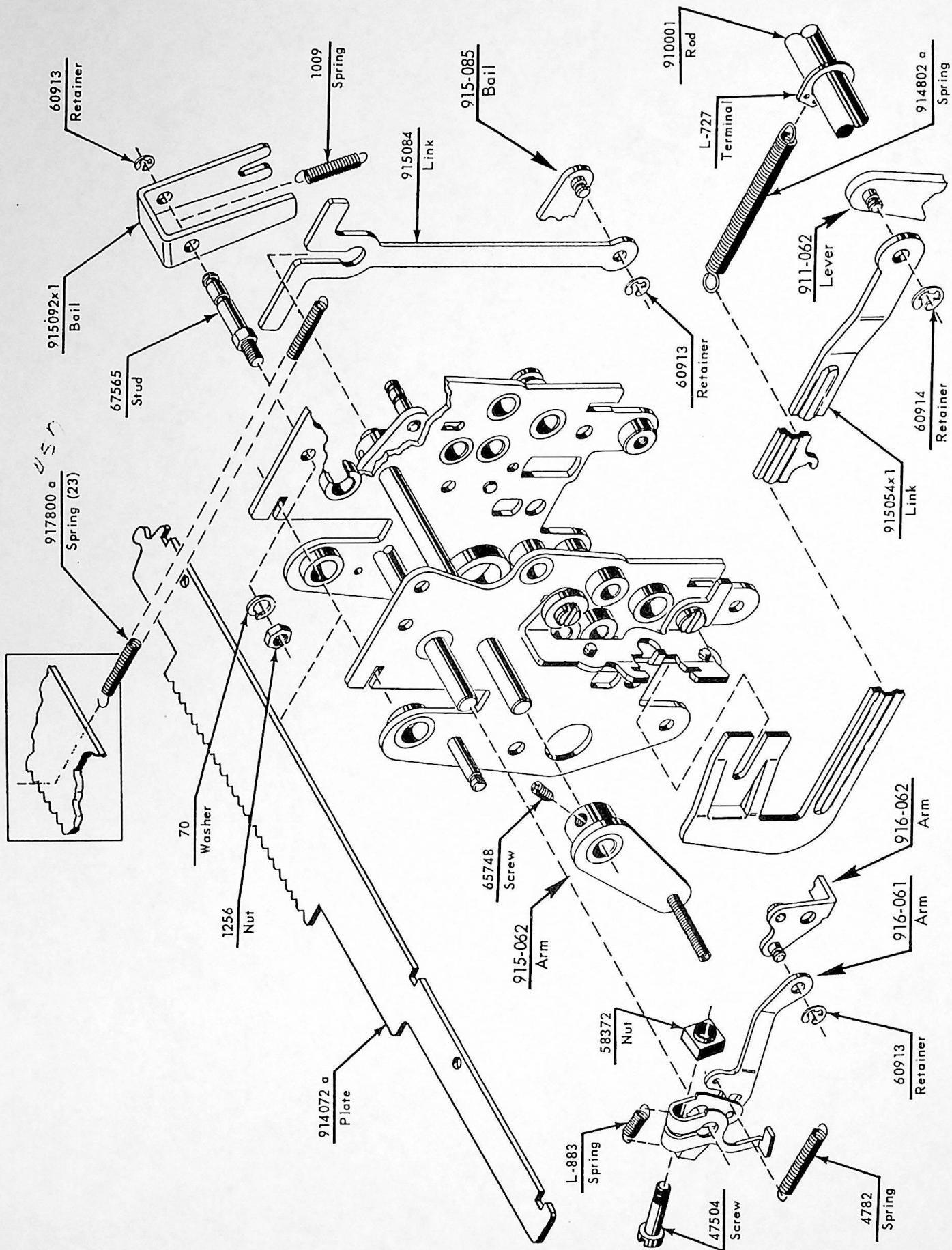
**ONLY BALL JOINT SELECTORS CAN BE REBUILT, (IDENTIFIED BY EITHER GREEN OR YELLOW DYKEM COLOR MARKING)**

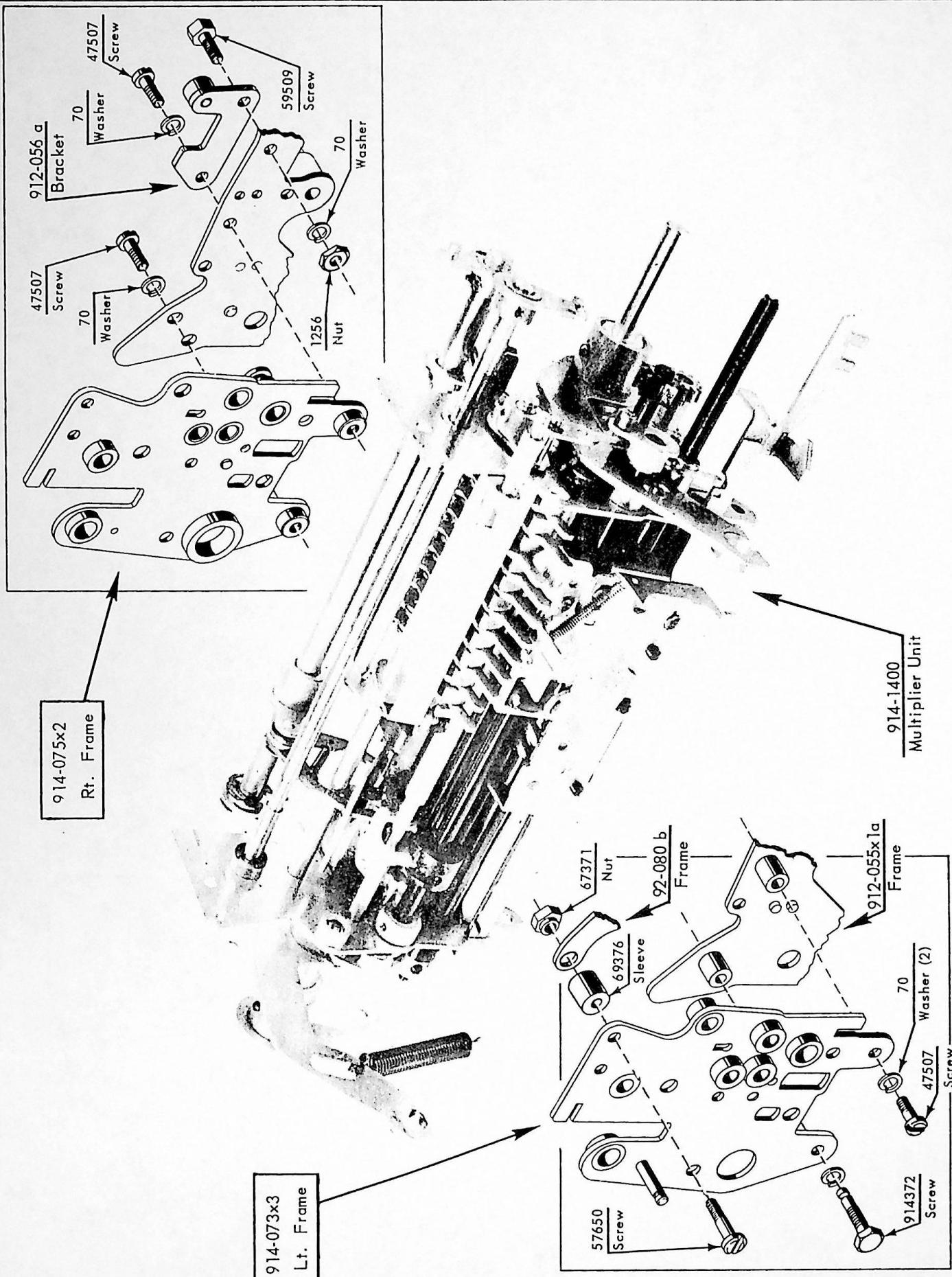
Note: Should a selector of previous design (non-ball joint) require replacement, a limited number of 92-2000x1 ball joint selector assemblies will be maintained in stock. However, requests for these will not be acknowledged unless the model and serial number are provided and the original non-ball joint selector accompanies the requisition. A charge will be processed for the replacement selector.

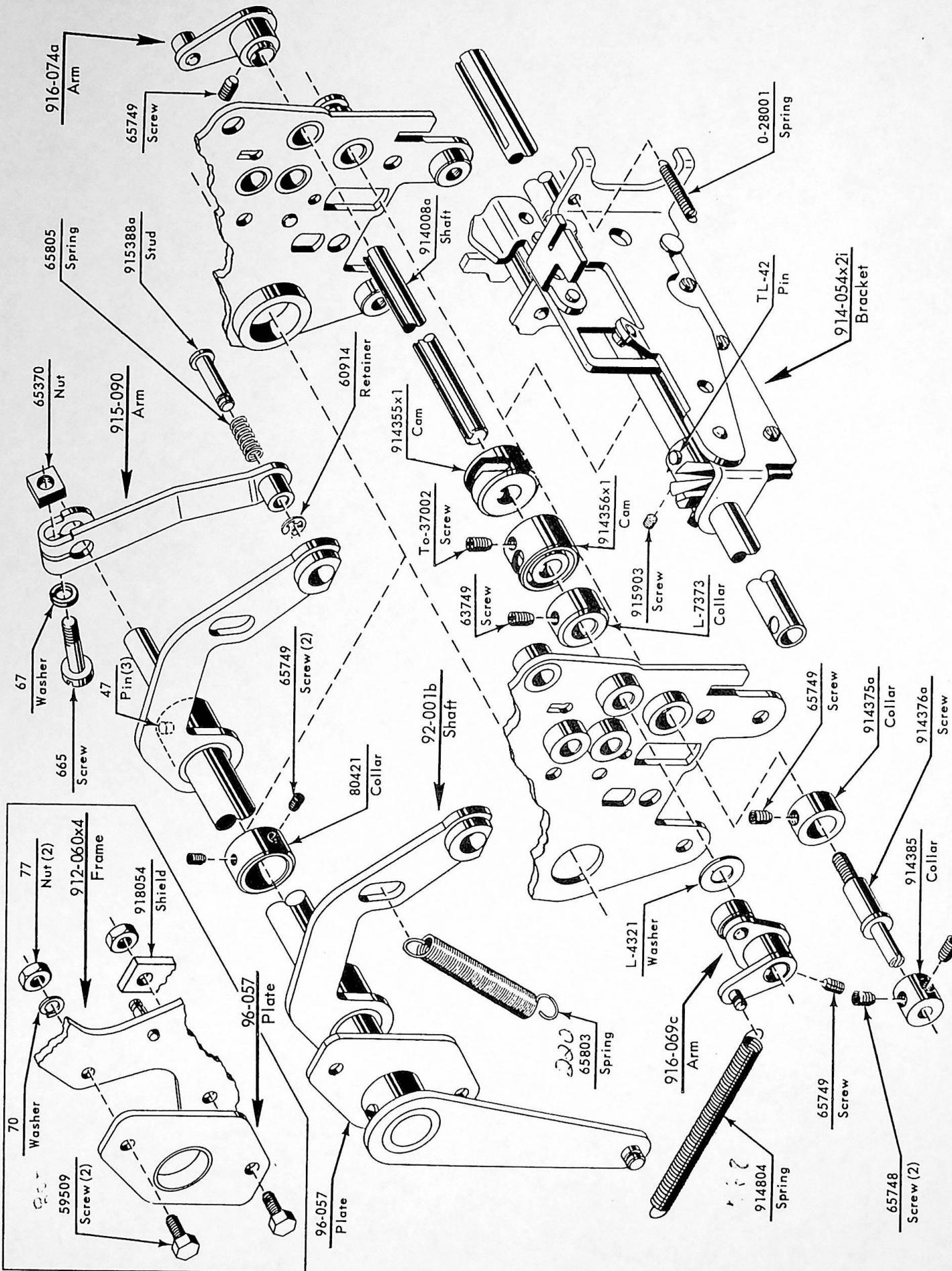
#### RECOMMENDED PROCEDURE FOR REBUILDING

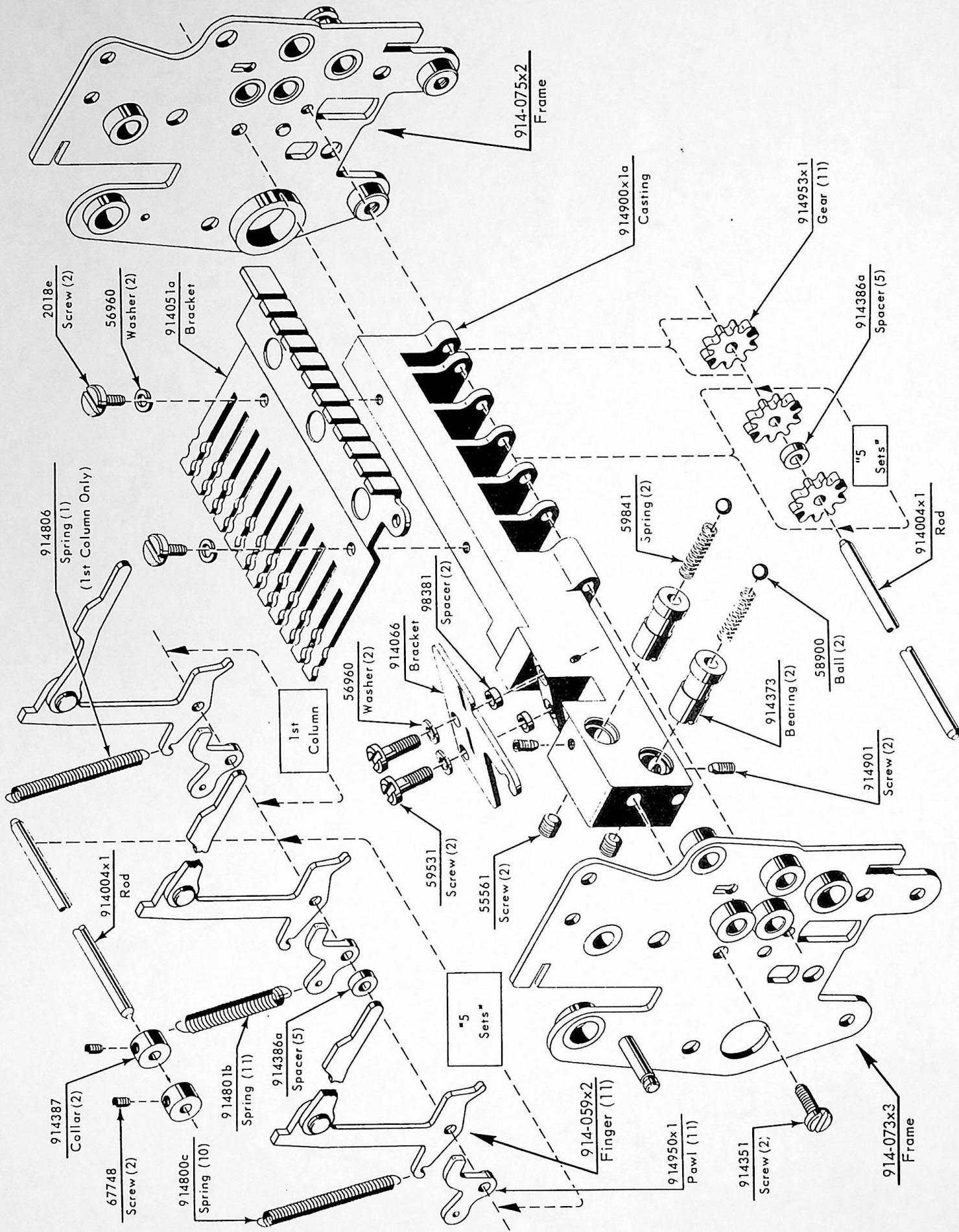
1. Identify by coloring the component requiring replacement.
2. Remove retainer #92900, spool disc #92350x1a, and washer #92089x1.
3. Carefully remove each setable gear assembly and locating retainers. Special care should be exercised that each assembly and retainer be set aside in the order of removal.
4. Replace broken tooth or component.
5. Reassemble the selector, being careful to locate each setable gear assembly and locating retainer into the same column position that it had been removed from.

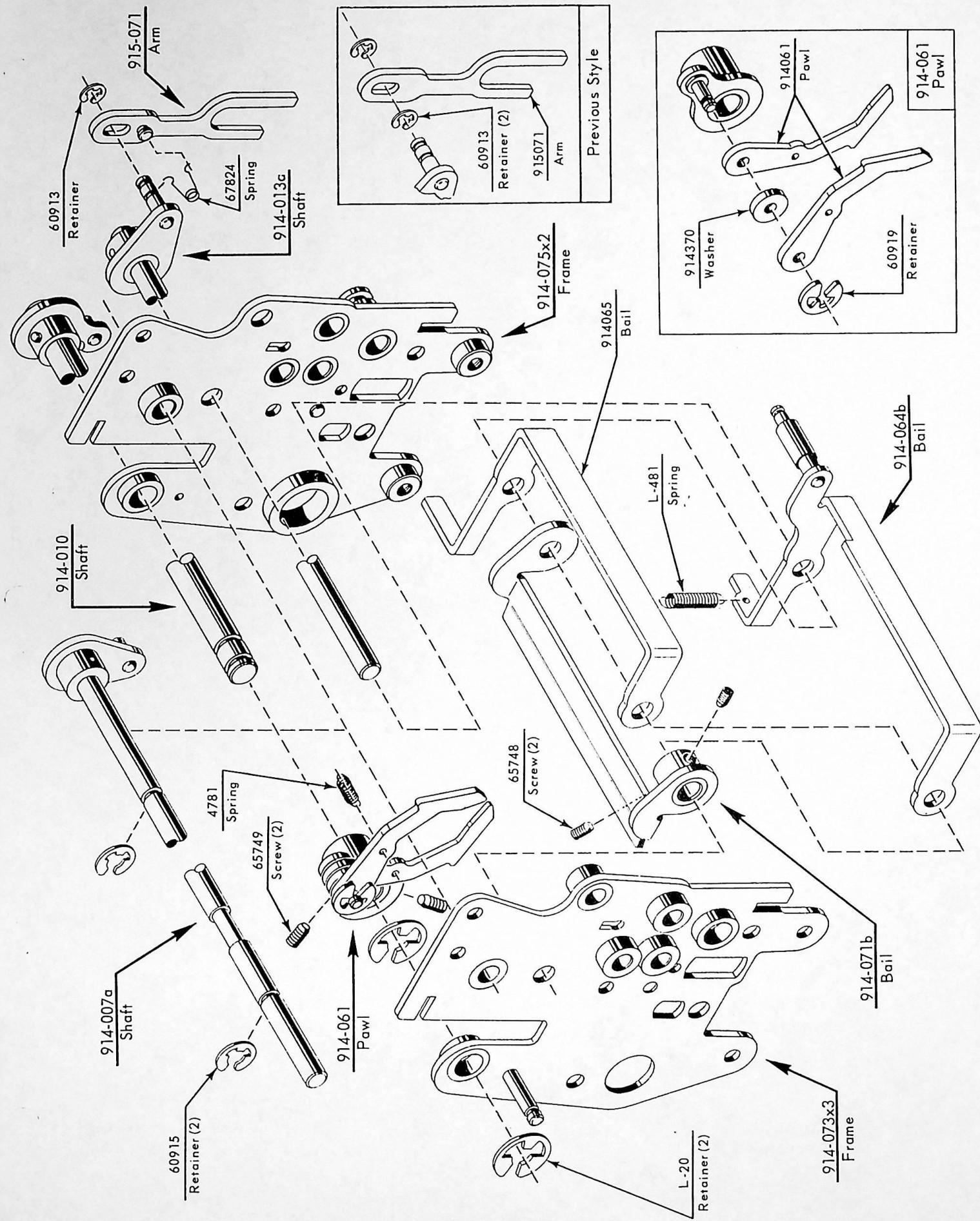


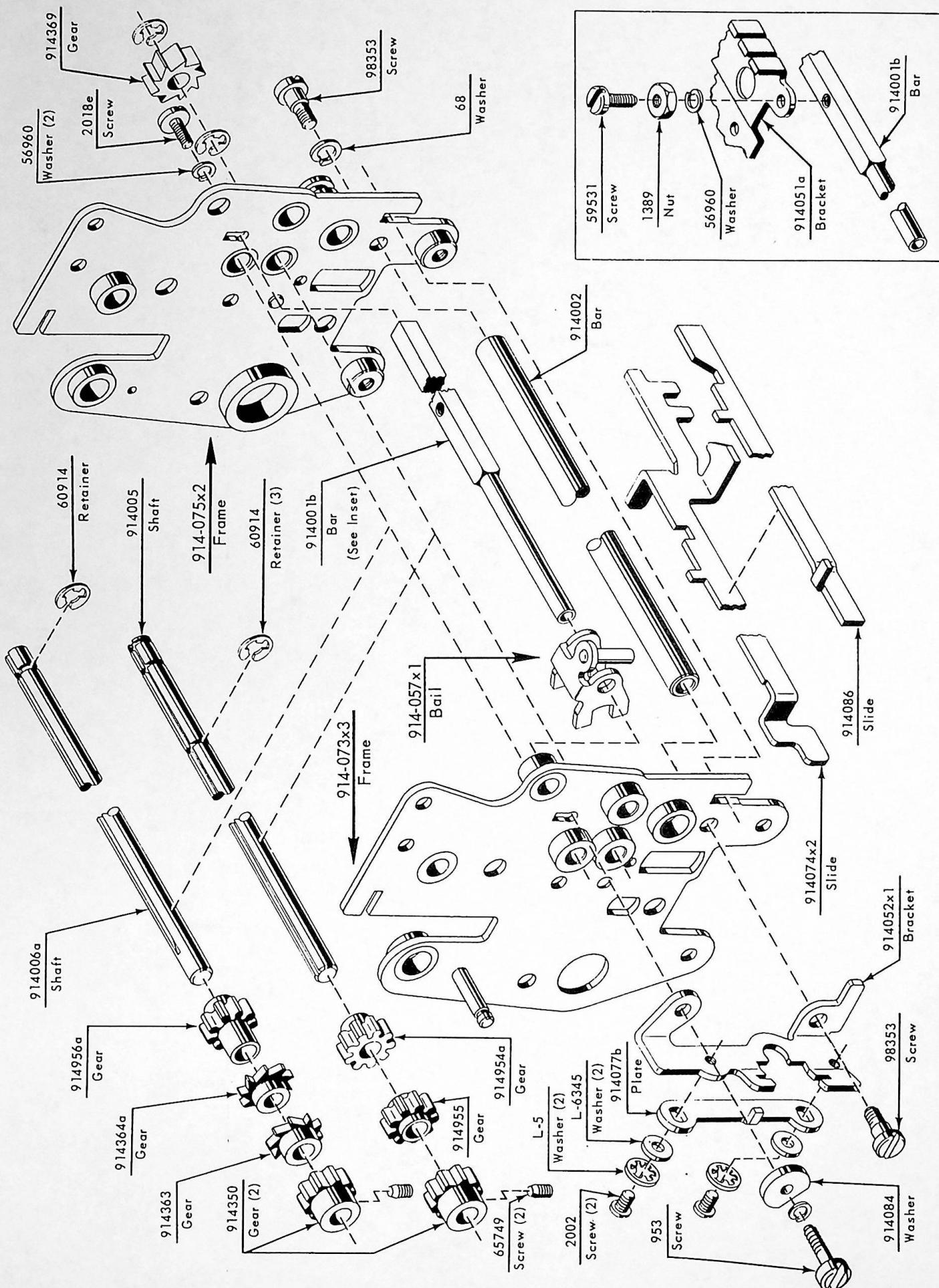


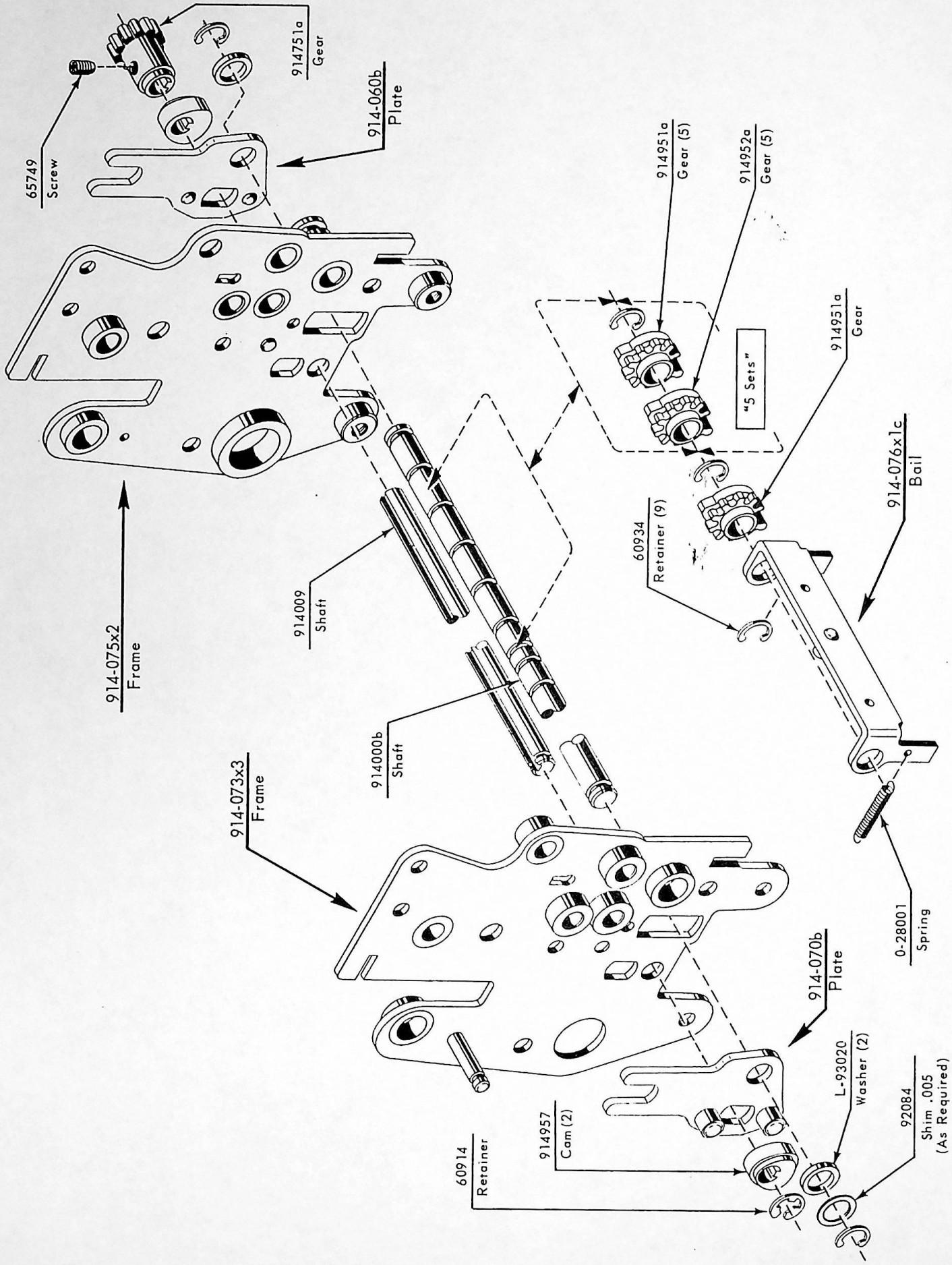


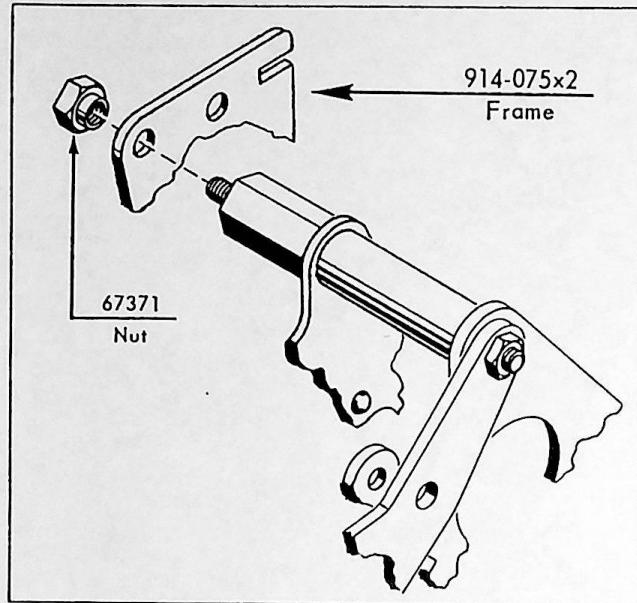




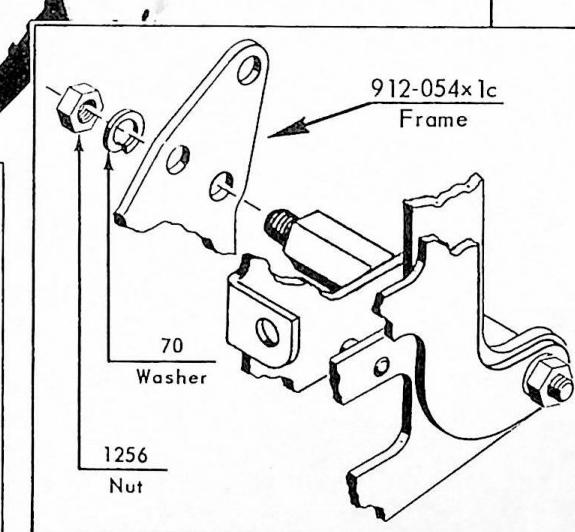
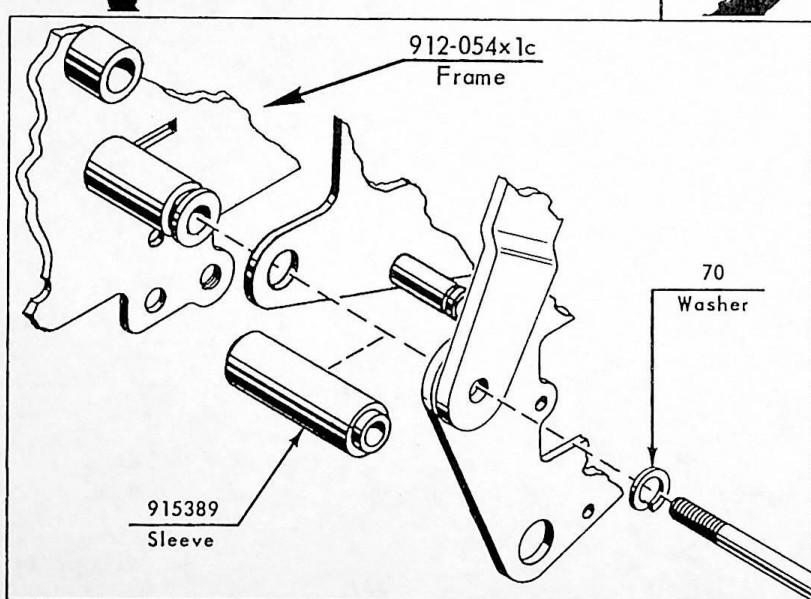


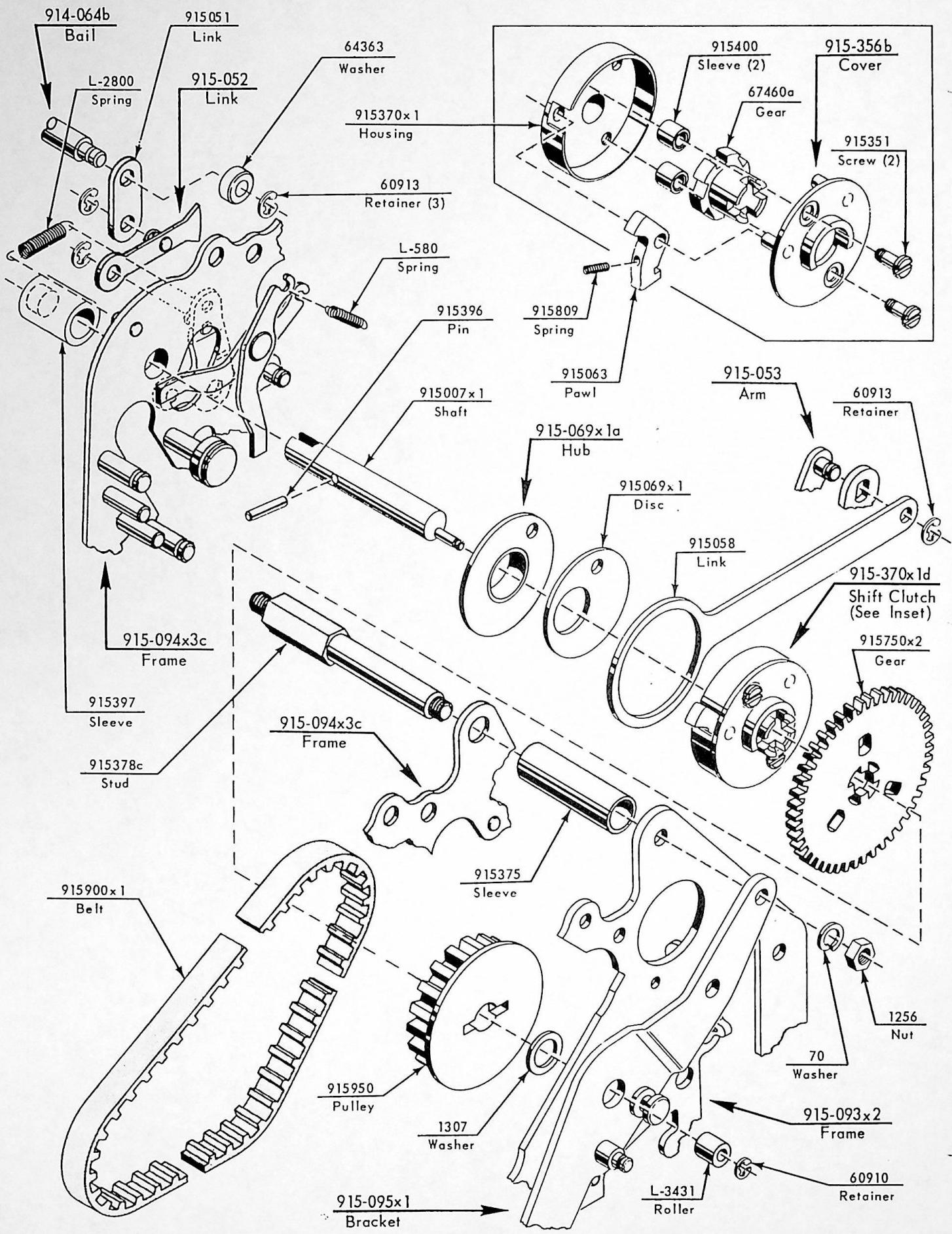


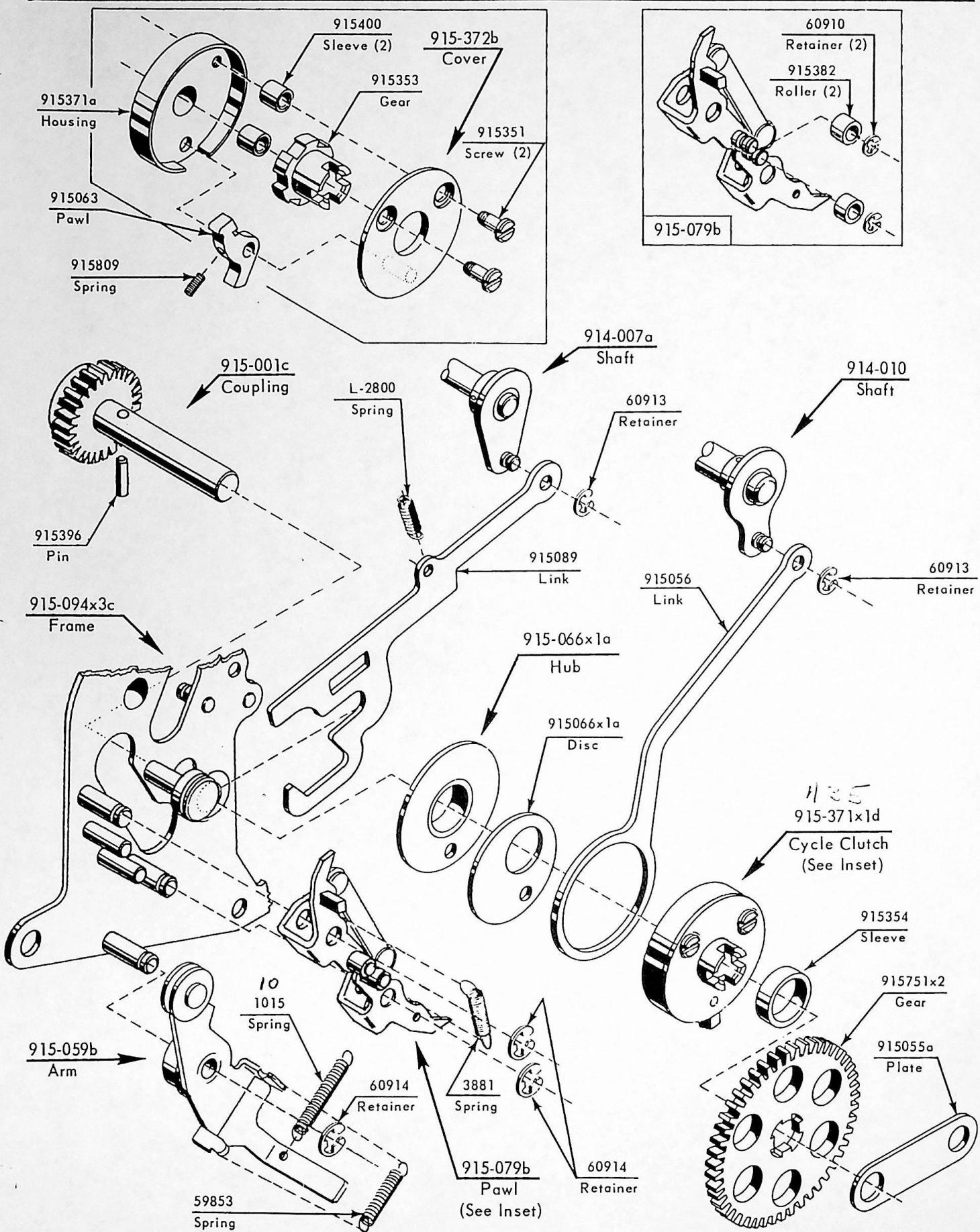


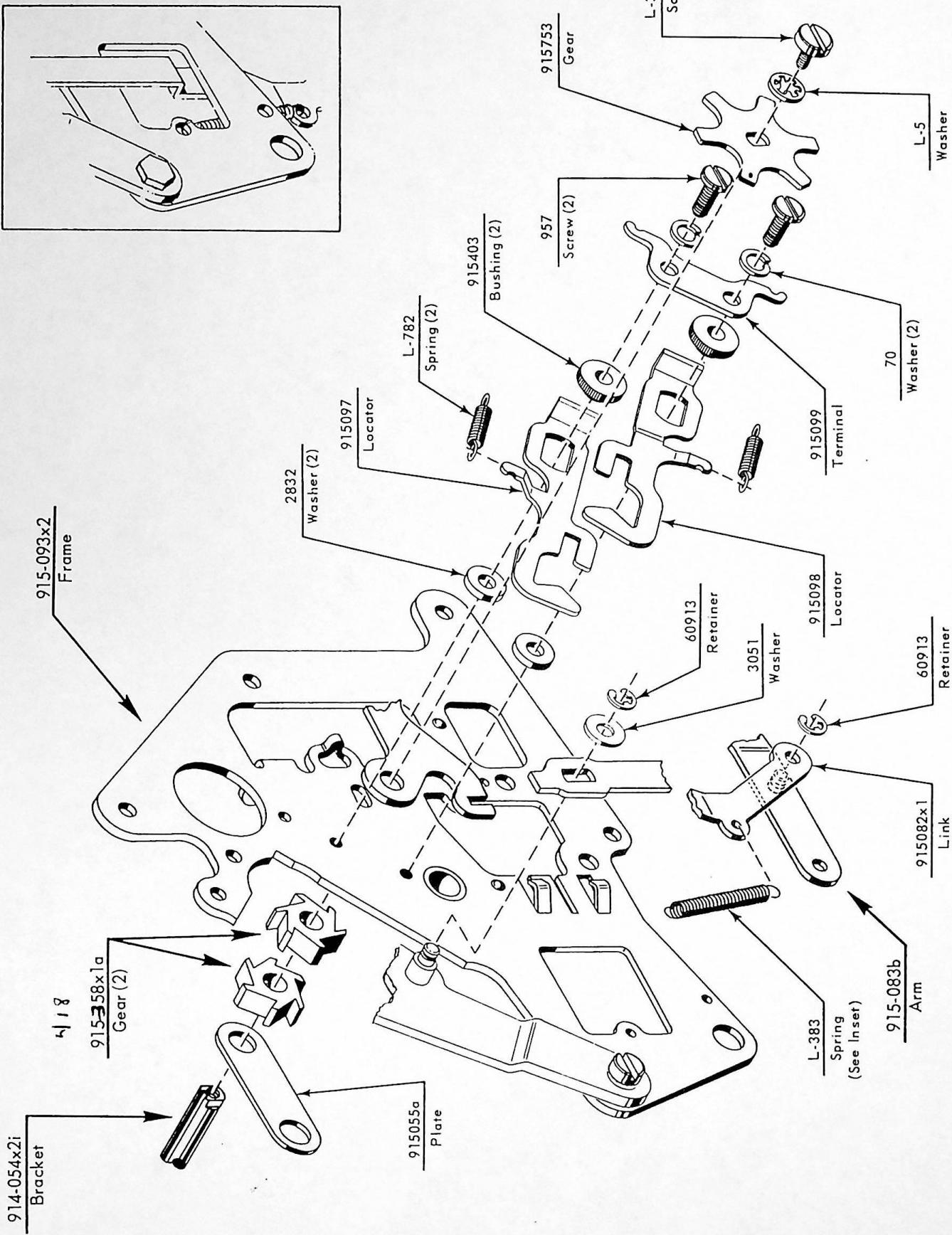


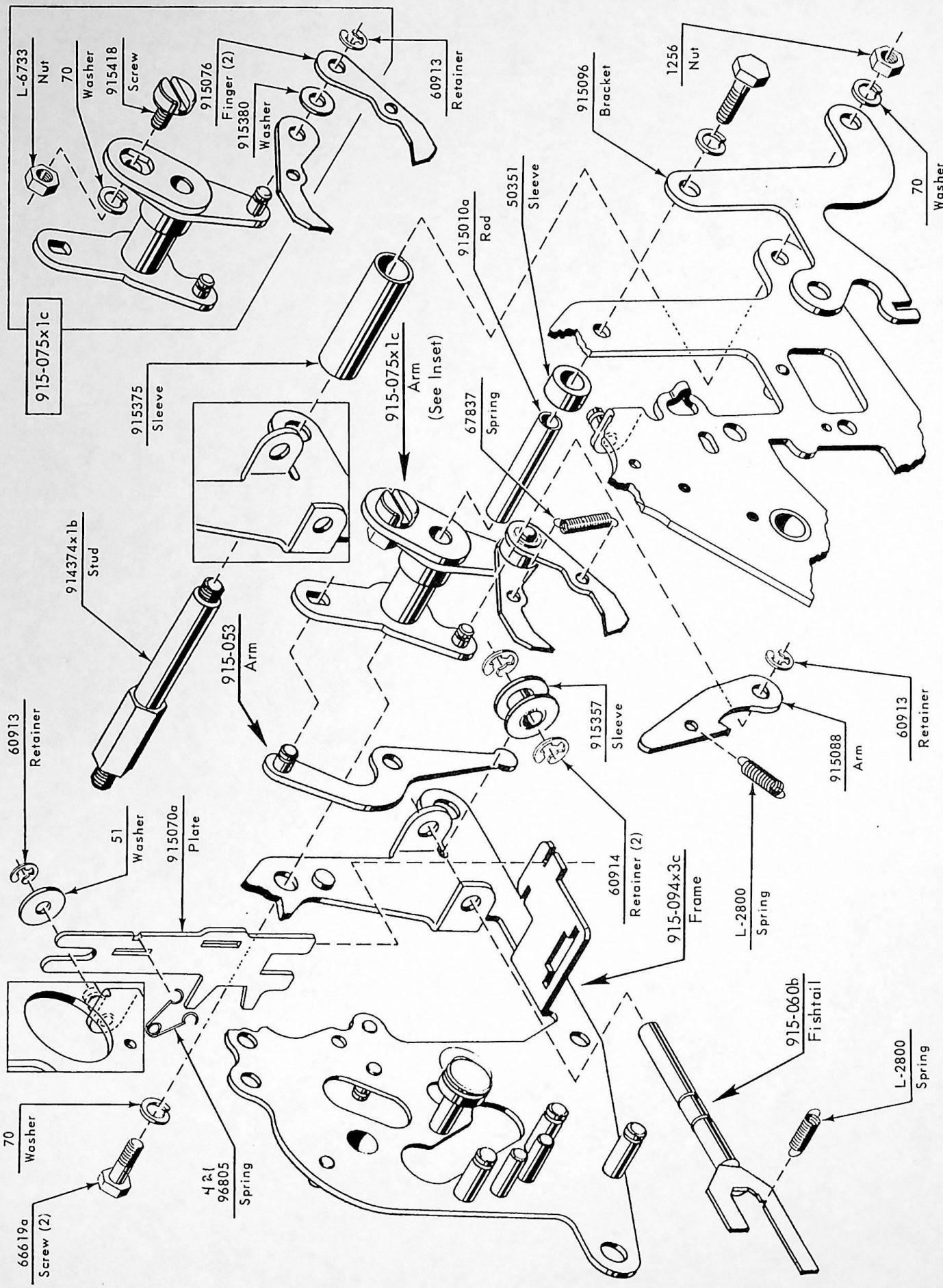
915-1500  
High Speed Control  
Unit

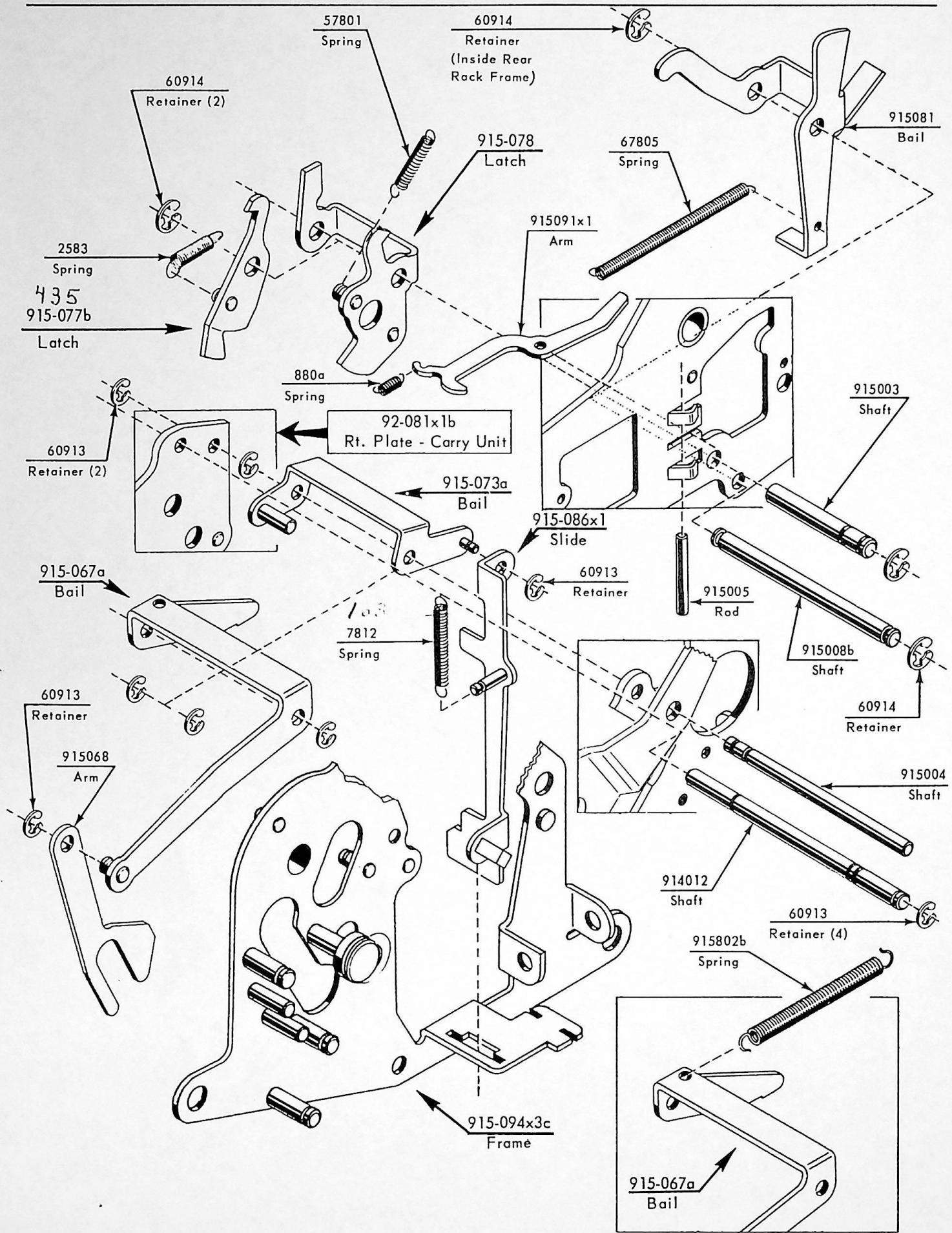


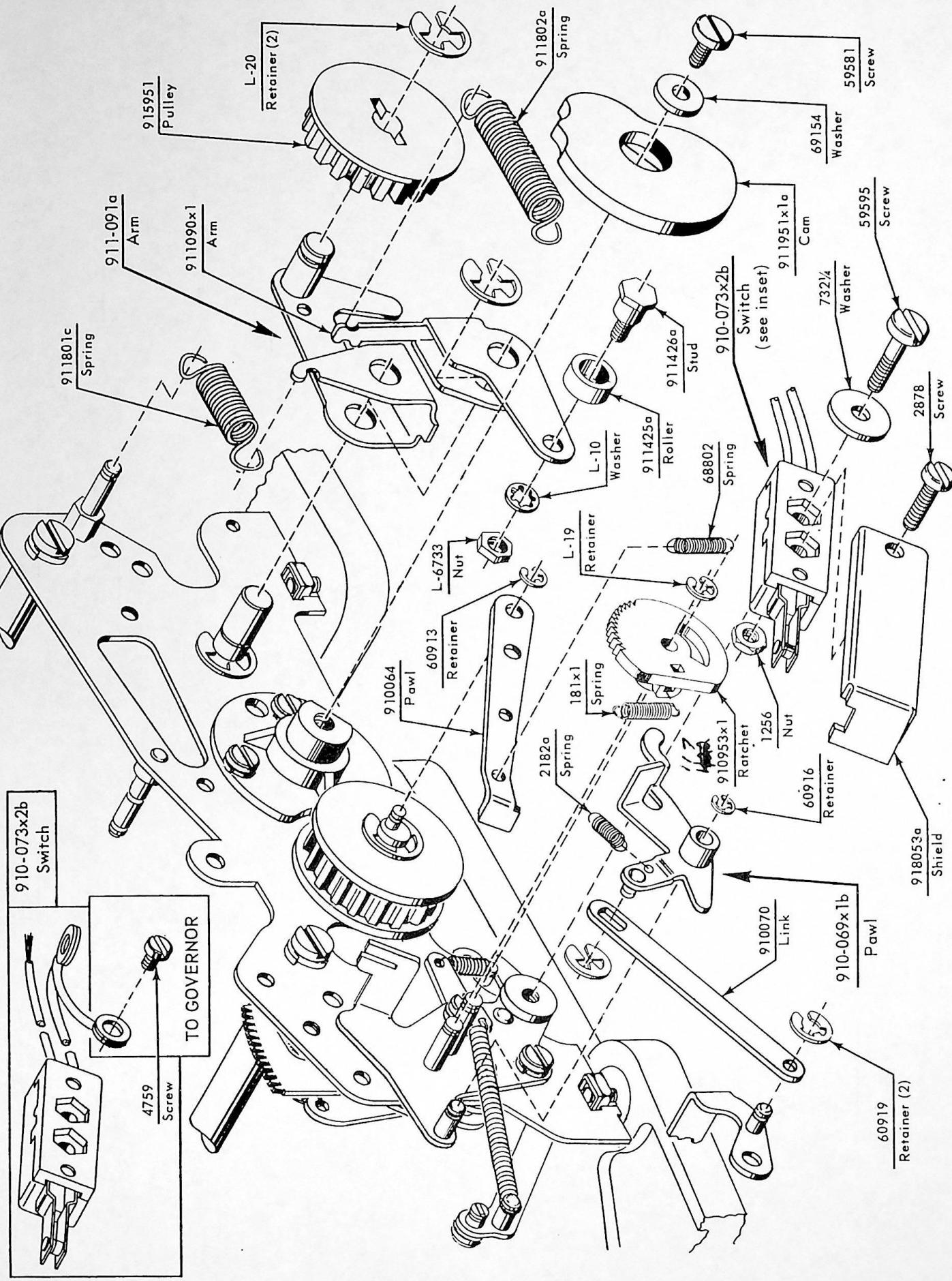


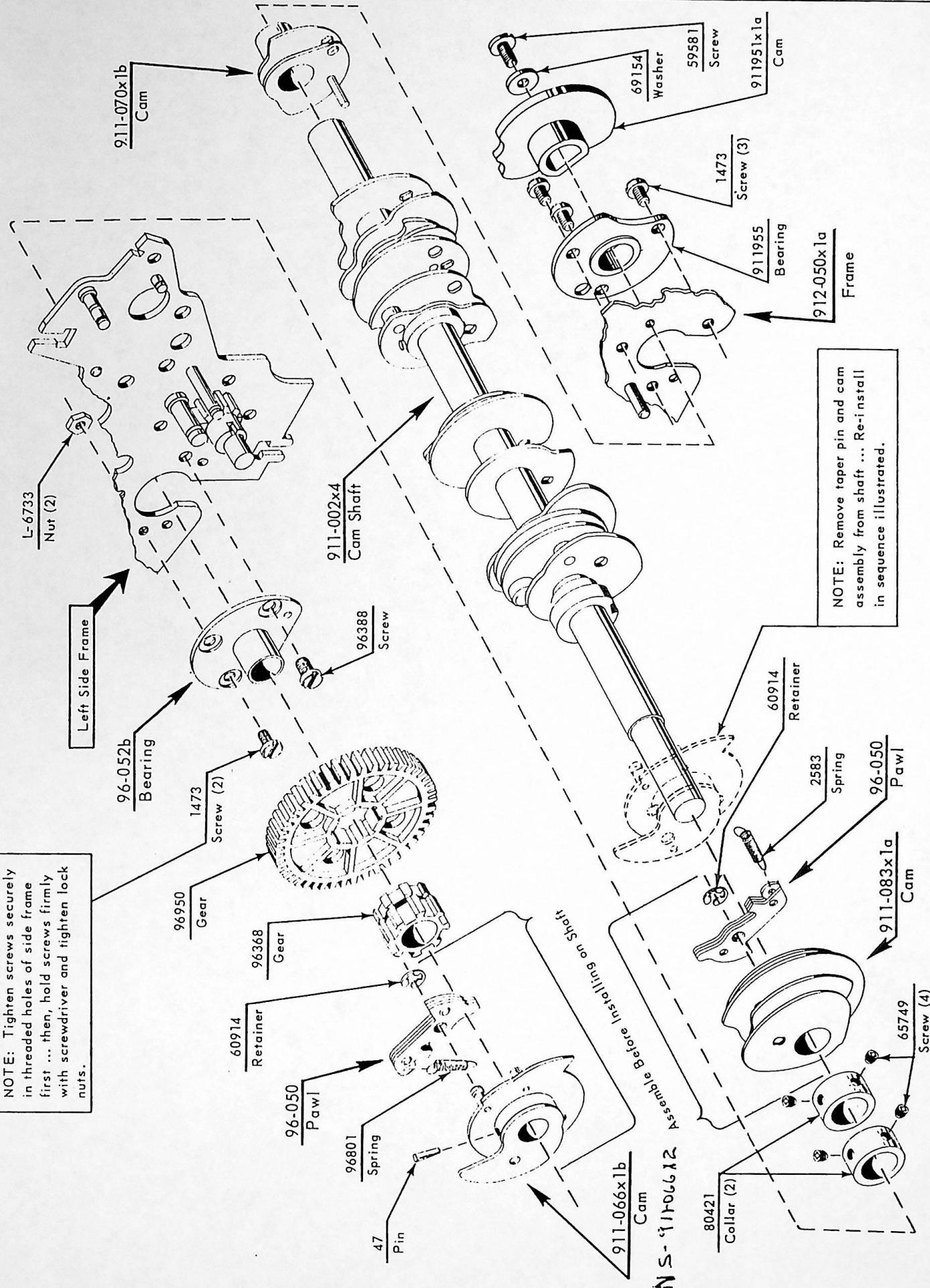


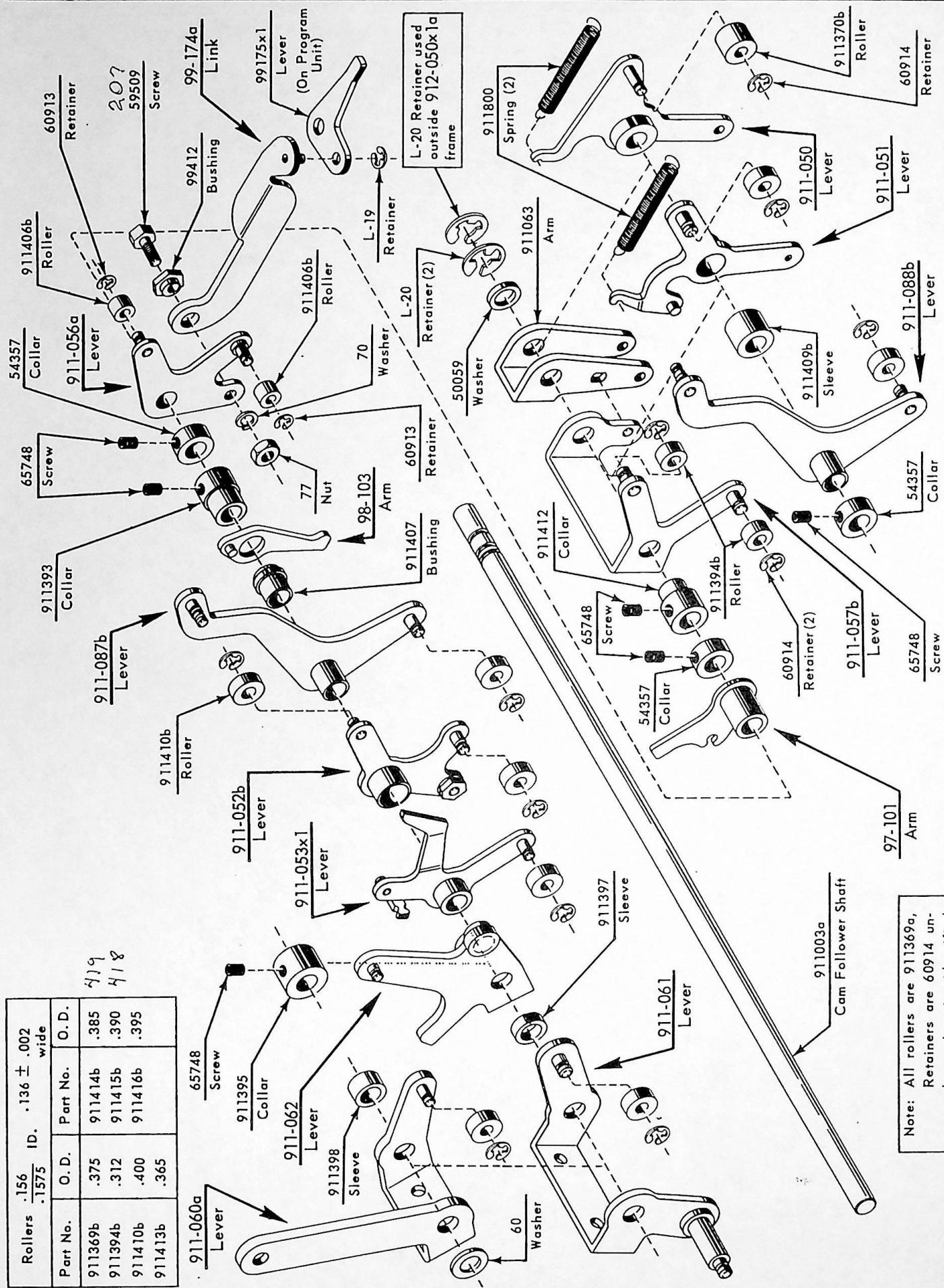


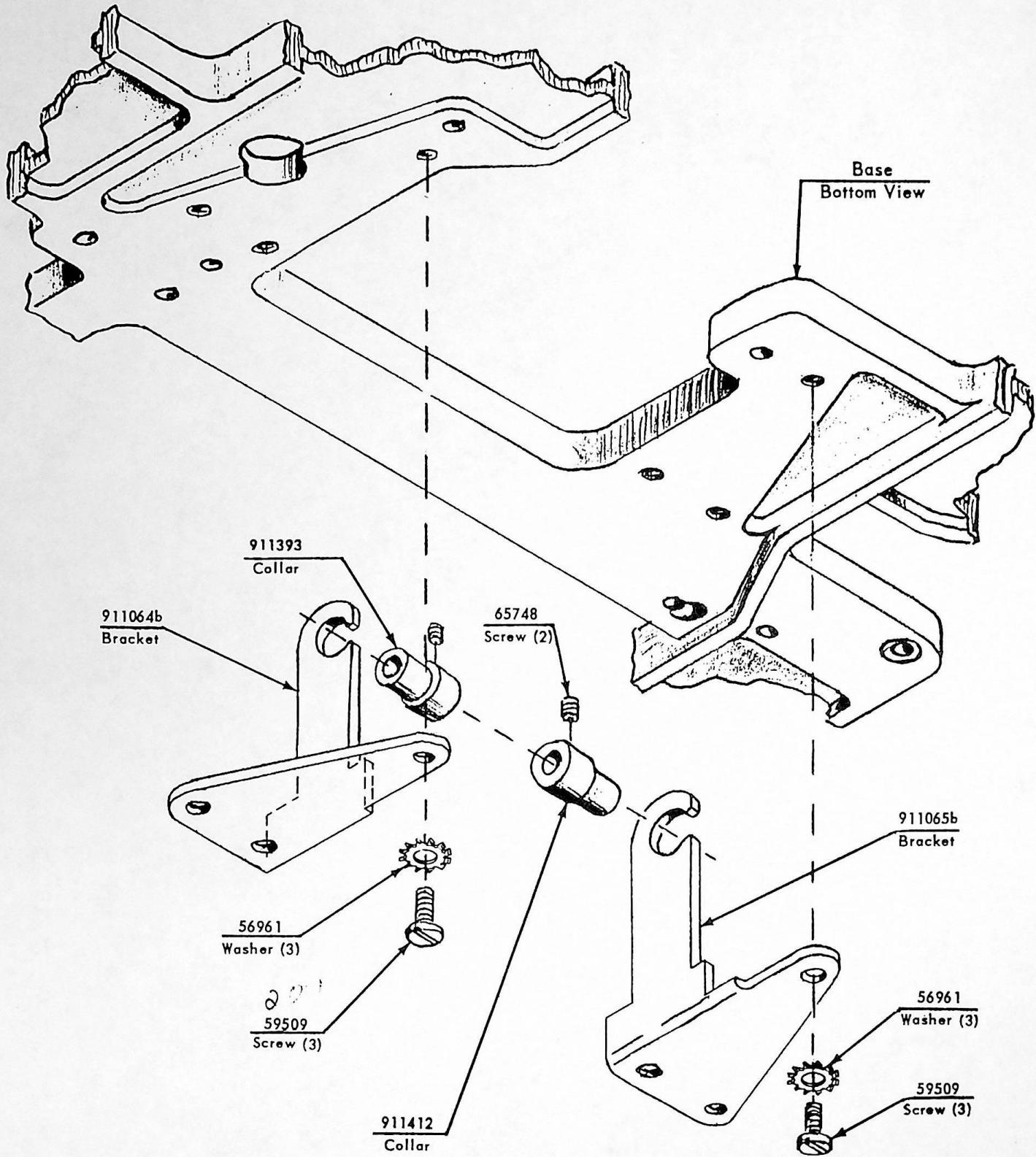


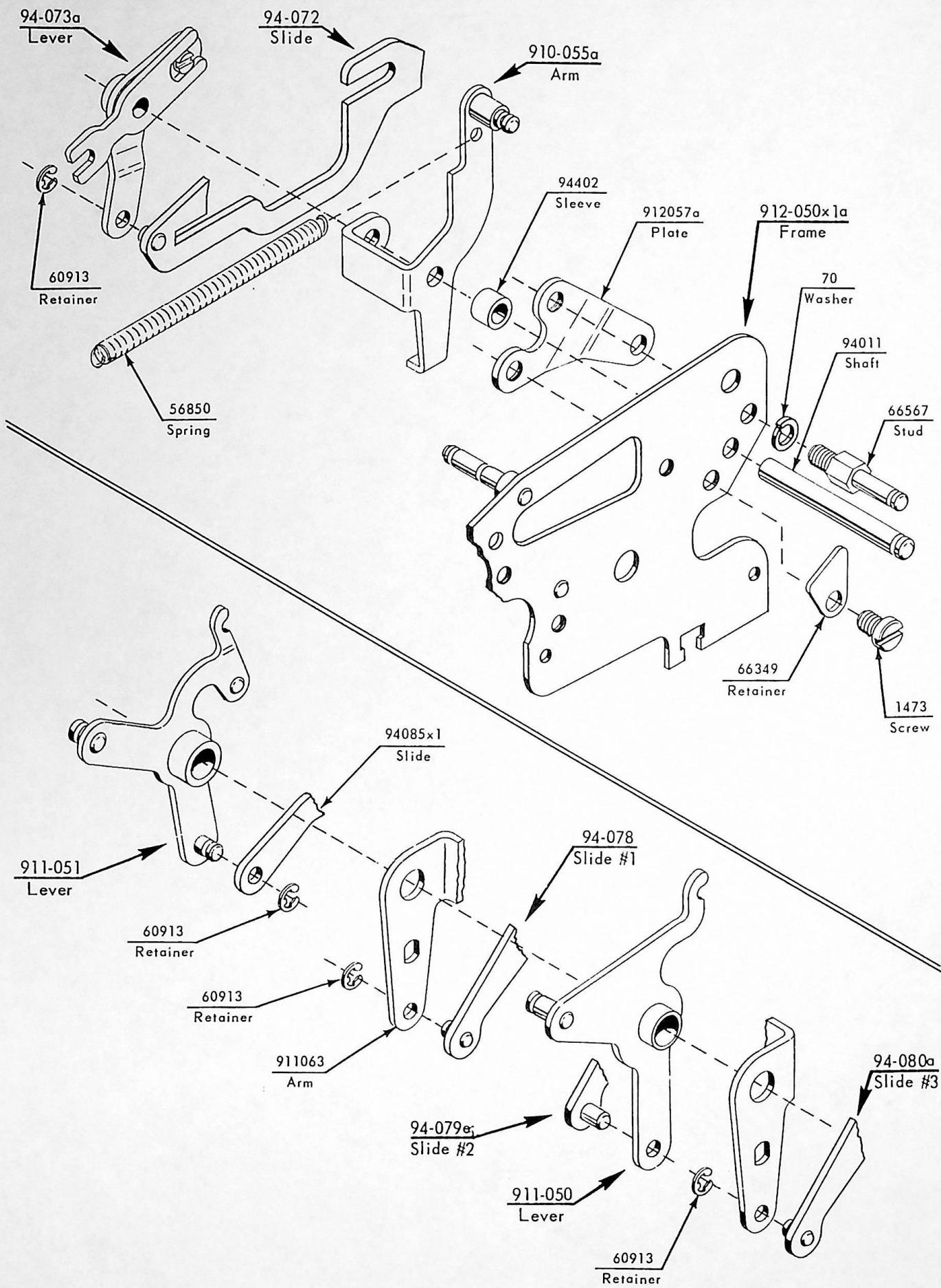


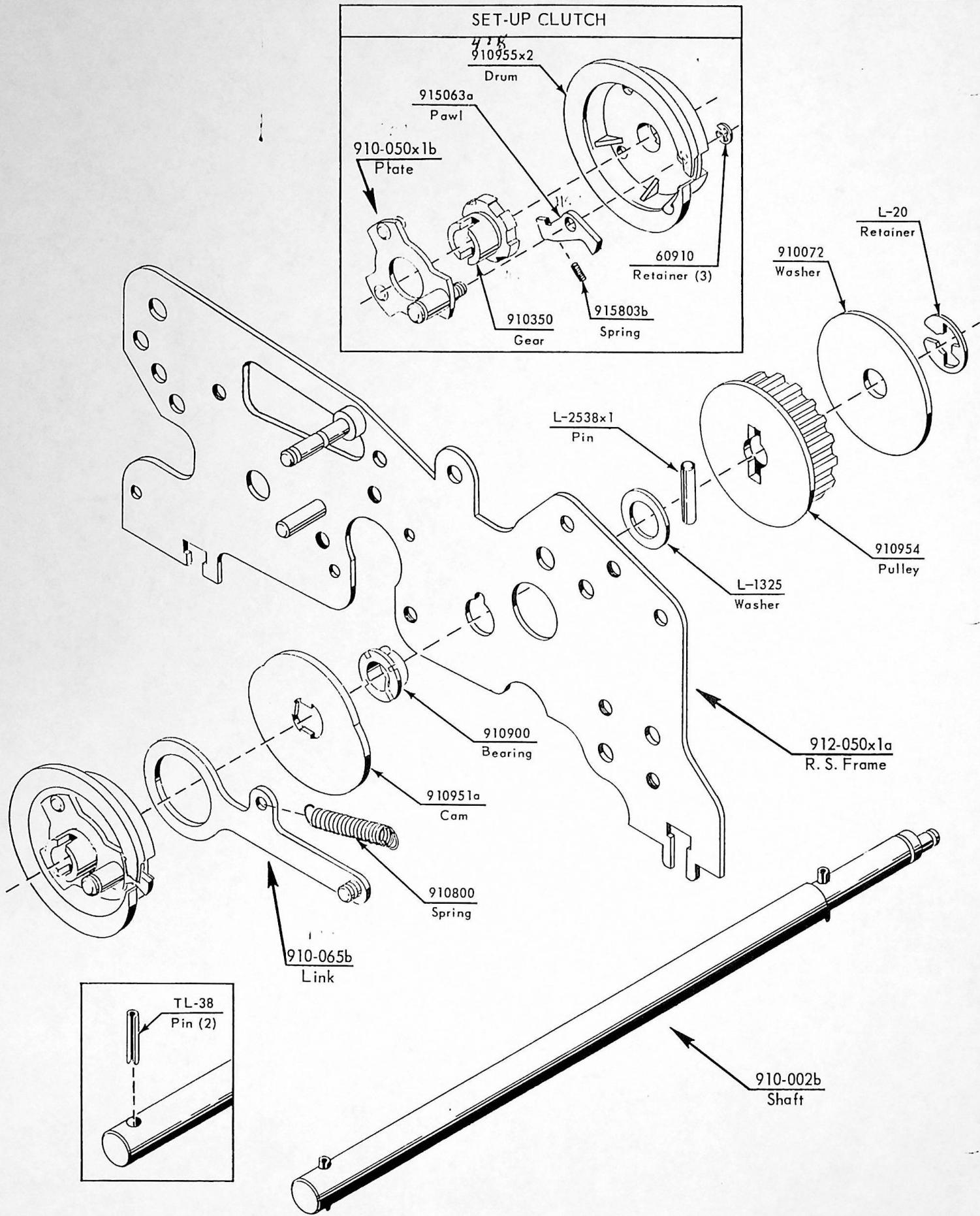


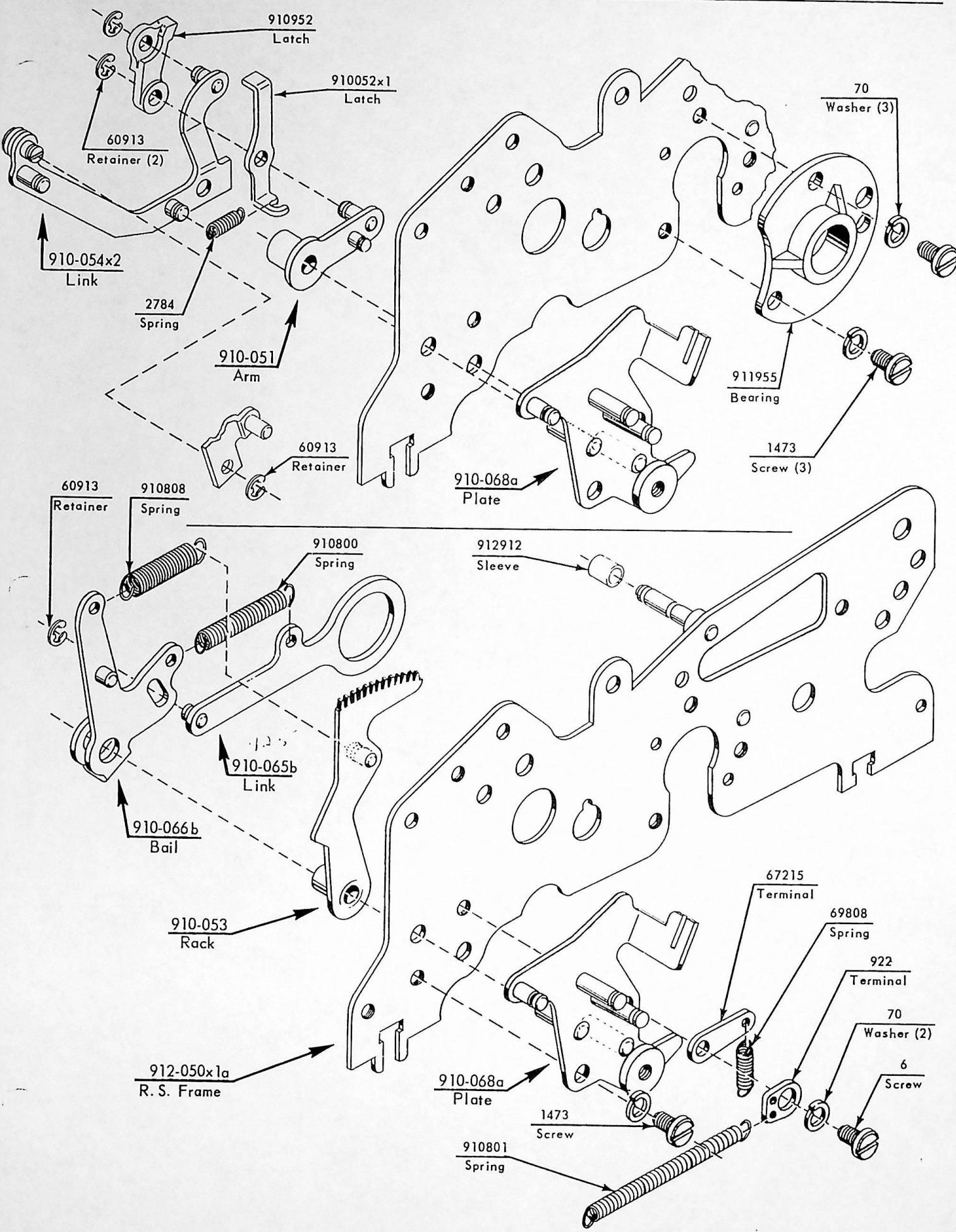


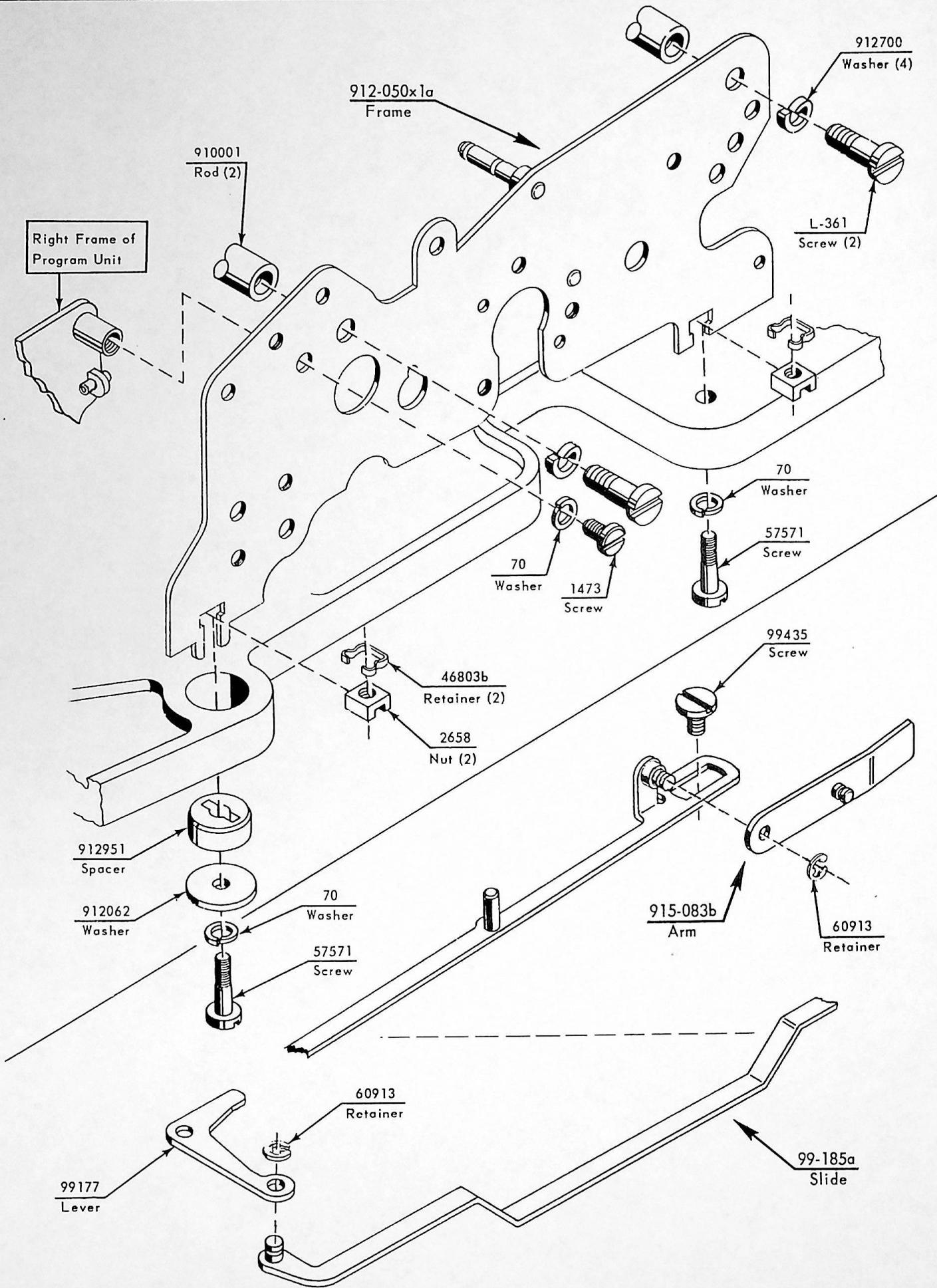












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L-5	Washer	G-3, K-6, L-4	L-782	Spring	L-4
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2784	Spring	M-7	L-7810	Spring	H-2
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95-069x1c	Plate	C-9	97-099b	Slide	F-11
95-073x1a	Bracket	C-3, E-1, E-2	97-100a	Slide	F-11
95-119	Lever	C-7	97-101	Arm	M-3
95-120x1	Slide	C-7	97-109	Arm	E-11
95-121x1	Plate	C-7, C-9	97-111a	Lever	E-11
95-5000	Rt. Keyboard	C-1	97-123	Bail	E-11
95-5001	Lt. Keyboard	C-6	97-125	Bail	E-11
96-050	Pawl	M-2	97-147	Latch	C-7
96-052b	Bearing	M-2	97-166a	Arm	E-11
96-056	Lever	B-2	97-354	Arm	E-10
96-057	Plate	K-3	97-754a	Gear	E-5
96-058a	Arm	B-2	97-915c	Cord	B-1

PART NO.	NAME	PAGE	PART NO.	NAME	PAGE
97-916d	Cord	E-11	99-078e	Bail	D-10
97-920a	Cord	E-5	99-079f	Bail	D-10
97-921a	Cord	E-5	99-080f	Bail	D-10
97-961a	Knob	E-9	99-090e	Bail	D-3
97-967a	Knob	E-9	99-095e	Bail	D-10
97-7000x1	Decimal Unit	E-4	99-096e	Bail	D-10
98-064c	Bail	F-11	99-097f	Bail	D-10
98-067d	Finger	F-5	99-102	Arm	D-2
98-070x1e	Hammer	F-2	99-104b	Lever	B-1
98-071x1e	Hammer	F-2	99-108b	Lever	D-2
98-076x1h	Hammer	F-2	99-115x1b	Plate	D-5, D-6
98-080	Gear	E-7	99-122b	Bail	D-7
98-081	Gear	E-7	99-123a	Bail	D-7
98-084	Link	F-3	99-124b	Bail	D-7
98-085	Arm	E-7, F-3	99-125	Bail	D-7, E-11
98-086	Arm	F-2	99-128h	Bail	D-10
98-087	Frame	F-3	99-136c	Frame	D-5
98-088	Frame	F-2	99-137a	Frame	B-1, D-4, D-5
98-099	Guide	F-3	99-138b	Lock	D-8
98-100b	Guide	F-2	99-152a	Slide	D-13
98-102	Bail	F-3	99-165x2d	Frame	D-8, D-9, D-15
98-103	Arm	M-3	99-166a	Arm	D-7, E-11
98-104	Link	F-5, F-7	99-171b	Lock	E-5
98-105d	Finger	F-5	99-174a	Link	M-3
98-106x1e	Hammer	F-2	99-178b	Plate	D-5
98-113	Bail	F-5	99-183	Plate	D-4, D-5, D-11
98-8000	Lower Pnt. Unit	F-4	99-184x1a	Plate	D-3, D-5
98-8001	Ham. Pnt. Unit	F-1	99-185a	Slide	M-8
99-004x1c	Shaft	D-11	99-186a	Bail	C-1, D-3
99-005	Shaft	D-11	99-187	Lever	E-1
99-007m	Shaft	C-1, C-3, D-3	99-227a	Shaft	D-7
99-008	Shaft	D-11	99-228	Bracket	D-8
99-013d	Shaft	D-4	99-231	Slide	D-13
99-014c	Shaft	D-11	99-232	Bail	D-7
99-020	Shaft	D-11	99-234	Shaft	D-7
99-050x1	Bracket	D-17	99-9000	Program Unit	D-1
99-051	Bracket	D-17	99-9001	Symbol Unit	D-14
99-052	Bracket	D-17	99-9002	Program Unit	D-1, D-9
99-057b	Bail	D-17	99-9003	Symbol Unit	D-14
99-058b	Bail	D-17	910-002b	Shaft	M-6
99-059c	Slide	D-17	910-050x1b	Plate	M-6
99-064b	Slide	D-17	910-051	Arm	M-7
99-075g	Bail	D-10	910-053	Rack	M-7
99-076g	Bail	D-10	910-054x2	Link	M-7
99-077e	Bail	D-10	910-055a	Arm	E-1, M-5

PART NO.	NAME	PAGE	PART NO.	NAME	PAGE
910-057x1a	Frame	E-1, E-2	913-058c	Guide	G-2
910-061x1	Link	E-1	913-060a	Arm	G-2
910-065b	Link	M-6	913-062a	Chute	G-4
910-068a	Plate	M-7	913-069x1b	Bail	B-5
910-069x1b	Pawl	M-1	913-070	Bail	B-5
910-073x2b	Switch	M-1	913-071b	Linkage	B-5
911-001g	Shaft	F-7, F-10	913-074a	Plate	G-1, G-5
911-002x4	Cam Shaft	M-2	913-077	Arm	G-2
911-050	Lever	M-3, M-5	913-078	Arm	G-2
911-051	Lever	M-3, M-5	913-080	Chute	G-5
911-052b	Lever	H-10, M-3	913-900a	Platen	G-5
911-053x1	Lever	H-10, M-3	913-955b	Knob	G-5
911-056a	Lever	M-3	913-1300	Platen Unit	G-1
911-057b	Lever	M-3	914-007a	Shaft	K-5, L-3
911-058x2	Lever	F-11	914-010	Shaft	K-5, L-3
911-059a	Bail	F-10	914-013a	Shaft	K-5
911-060A	Lever	B-8, M-3	914-054x2i	Bracket	K-3, L-4
911-061	Lever	M-3	914-057x1	Bail	K-6
911-062	Lever	K-1, M-3	914-059x2	Finger	K-4
911-066x1b	Cam	M-2	914-060b	Plate	K-7
911-070x1b	Cam	M-2	914-061	Pawl	K-5
911-083x1a	Cam	M-2	914-064b	Bail	K-5, L-2
911-087b	Lever	M-3	914-070b	Plate	K-7
911-088b	Lever	F-7, M-3	914-071b	Bail	K-5
911-091a	Arm	M-1	914-073x3	Frame	K-2, K-4, K-5
912-050x1a	Frame	E-2, M-2, M-5	914-075x2	Frame	K-2, K-4, K-5
912-051b	Frame	F-4, F-7, F-9	914-076x1c	Bail	K-7
912-054x1c	Frame	H-2, II-3, J-2	914-752	Segment	H-2
912-055x1a	Frame	B-5, H-2, II-3	914-1400	Multiplier Unit	K-2
912-056a	Bracket	K-2	915-052	Link	L-2
912-060x4	Frame	B-2, B-4, B-5	915-053	Arm	L-2, L-5
912-061b	Frame	F-7, F-9, F-10	915-059b	Arm	L-3
912-063a	Plate	A-5	915-060b	Fishtail	L-5
912-071	Bracket	F-6, F-9	915-062	Arm	K-1
912-072	Bracket	F-6, F-9	915-066x1a	Hub	L-3
912-900b	Screw	C-1, C-6, C-9	915-067a	Bail	L-6
912-901x2	Cover	A-1	915-069x1a	Hub	L-2
912-902h	Cover	A-4, A-5	915-071	Arm	K-5
912-908a	Roller	A-5	915-073a	Bail	L-6
912-931	Plate	A-2	915-075x1c	Arm	L-5
912-1200	Base Unit	D-16, D-17	915-077b	Latch	L-6
913-001	Shaft	G-5	915-078	Latch	L-6
913-050a	Frame	G-3, G-4, G-5	915-079b	Pawl	L-3
913-051a	Frame	G-2, G-4, G-5	915-083b	Arm	L-4, M-8
913-054	Arm	G-3	915-085	Bail	H-2, K-1
913-057c	Guide	G-2			

PART NO.	NAME	PAGE
915-086x1	Slide	L-6
915-090	Arm	K-3
915-093x2	Frame	L-2, L-4
915-094x3c	Frame	L-2, L-3, L-5
915-095x1	Bracket	L-2
915-356b	Cover	L-2
915-358x1a	Gear	L-4
915-370x1d	Clutch	L-2
915-371x1d	Clutch	L-3
915-372b	Cover	L-3
915-1500	H/S Control	
	Unit	E-1
916-002a	Shaft	B-11
916-005c	Shaft	J-5
916-008c	Shaft	B-10
916-051	Arm	B-11
916-053b	Arm	B-11
916-061	Arm	K-1
916-062	Arm	J-4, K-1
916-063a	Arm	B-9
916-064	Arm	B-9
916-066	Arm	B-7
916-067	Arm	B-9
916-068	Lever	J-4
916-069c	Arm	K-3
916-071	Arm	J-4
916-074a	Arm	K-3
916-075a	Bail	B-7, B-12
916-076	Arm	B-7
916-077a	Arm	B-7
916-078	Plate	J-2
916-079c	Arm	B-12
916-750b	Gear	B-10
917-001b	Bar	F-9
917-050g	Rack	F-9
917-051g	Rack	F-9
917-056b	Plate	F-10
917-062f	Rack	F-9
917-063c	Rack	F-9
917-089b	Rack	F-9
917-1700	Rear Rack	H-1
917-1701	Front Rack	F-8
917-1705	Front Rack	F-8
918-704b	Shutter	B-15
918-705e	Governor	B-14, B-15
918-706a	Condensor	B-14

PART NO.	NAME	PAGE
918-1800	Motor	B-13

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Supplement of 3/30/67

This is the first of a series of supplements to the 'PC' Parts Catalog which will keep Service Departments advised of revisions and improvements as they are made in production. Catalog corrections and additions will also be included in these supplements. Subjects are identified by item numbers for reference purposes. Change in Design (C.D.) numbers are provided for Orange reference.

In posting the part number changes in your catalog, it is suggested that a red pencil be used....Draw a line thru the previous number and write in the complete revised number with reference to the item number and/or supplement page on which the change is described.

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#1 Main Cam Shaft/Cam Follower Shaft Brace

(Ref. C.D. P-832)

Page M-2

Change Part No. 911-002x4 to 911-002x6

Page M-3

Change Part No. 97-101 to 97-101xl  
and above Part No. 97-101xl, add: 911011 Bearing

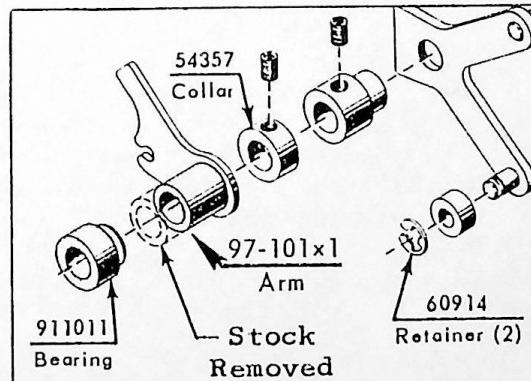
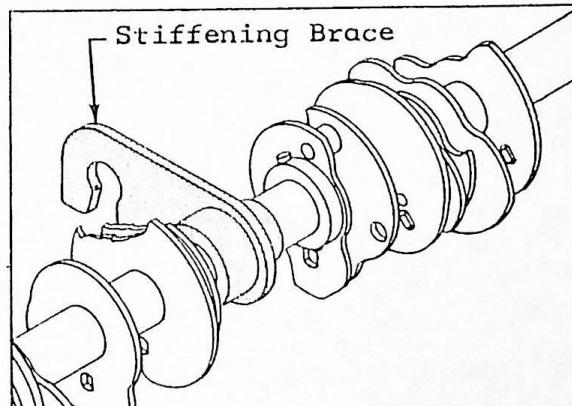
A stiffening brace which directly connects the main cam shaft to the cam follower shaft, near the center of the machine, is being added to eliminate "flexing" and thereby provide greater stability between these shafts.

A bearing, part no. 911011, has been added to the cam follower shaft to complete the coupling of the two shafts.

The hub of the 97-101xl, decimal intermediate arm, has been altered to accommodate the new bearing.

Installation in production machines began with serial no. B-980353.

This change is NOT to be installed in field machines unless it becomes necessary to replace the main cam shaft. If this is done, then the improvements to the hold-up mechanism (described under #5 and #6 in this release) and the improvement in the decimal actuator mechanism (described under #15 in this release) must also be installed.



See also item #18 of this release.

## #2 Improved Plus Positioning Link

(Ref. C.D. P-832)

Page H-9

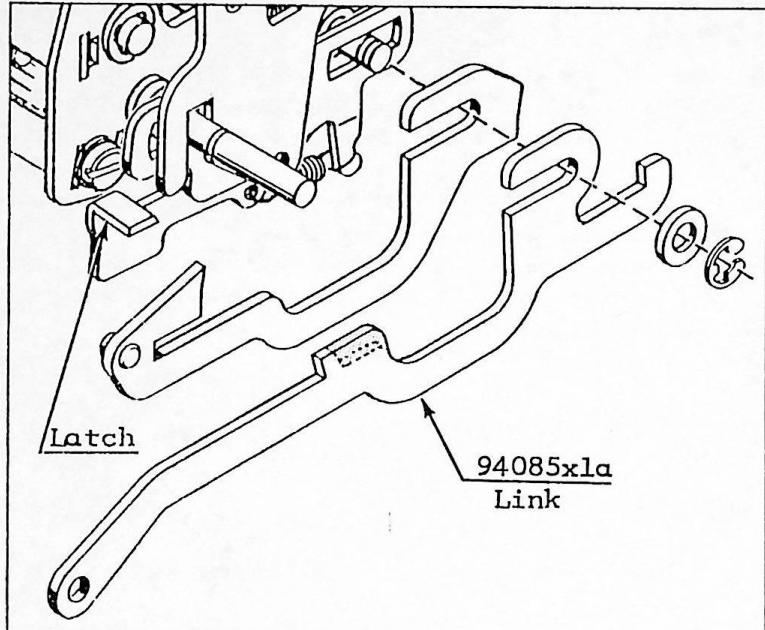
Change Part No. 94085x1 to 94085x1a

Stock has been added (shaded area of illustration) behind the lug on top of the plus positioning link 94085x1a to eliminate the possibility of the accumulator positioning latch being caught behind this lug.

Installation of the improved link in production machines began with serial no. B-980272.

Improved links MUST be installed in all machines in Branch stock before delivery to a customer ....Updating of customer machines, at the convenience of the Branch, is recommended as a reliability improvement.

Field stock of previous style links should be returned for credit.



## #3 Strengthened Hammer Restoring Bar

(Ref. C.D. P-832)

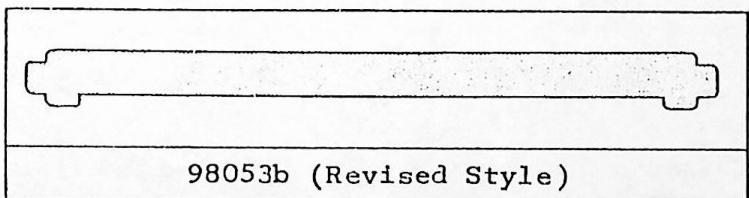
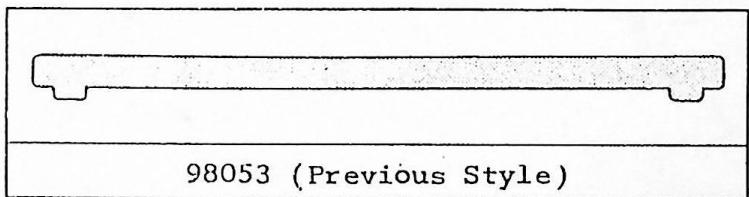
Page F-2

Change Part No. 98053 to 98053b

Stock has been added to the hammer restoring bar 98053b to eliminate the possibility of the bar "bowing" (which could result in print failure...especially in the middle columns).

Installation of improved restoring bars in production machines began with serial no. B-976391.

Improved bars MUST be installed in all machines in Branch stock before delivery to a customer ....Customer machines should be updated on the next service call or maintenance inspection.



Field stock of previous style restoring bars should be returned for credit.

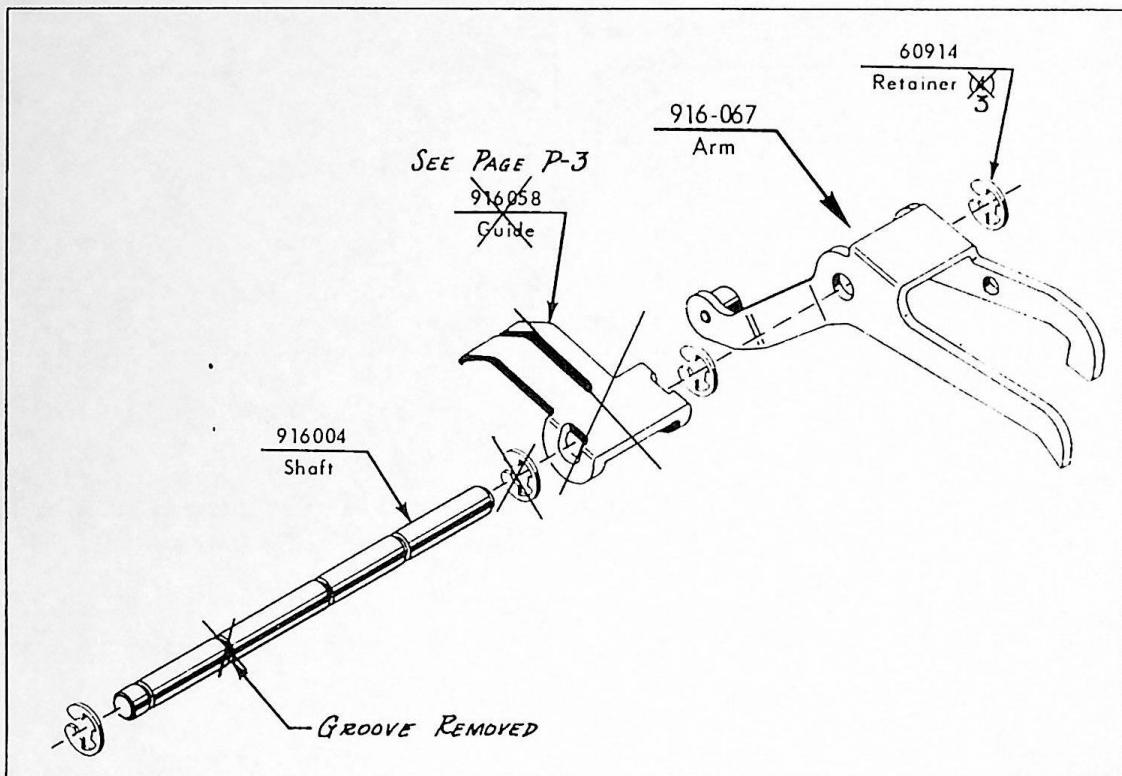
## #4 Tabulator Belt Replaced by Rack and Pinion

(Ref. C.D. P-827)

The timing belt of the transfer decimal tabulator mechanism has been replaced by a rack and pinion gear mechanism. This will eliminate binding of the decimal shafts and the critical nature of the auxiliary hold-up trip spring adjustment.

Page B-9

Make the changes illustrated below on page B-9. (The tab. belt guide, 916058, is not required with the new style tab. rack. Its retainer and the retainer groove in 916004 shaft are also removed.)



Page B-11 and B-12

Mark your copy of Pages B-11 and B-12 "Previous Style--for reference only, see B-11 and B-12 revised 3/30/67".

A copy of Pages B-11 and B-12, revised 3/30/67 is attached to this supplement. Insert the revised page between B-10 and B-11.

The new tabulator rack (97148) and rear pinion gear (97970x1) are illustrated on page B-11 revised. A slotted guide lug for the rack has been added to the tab. disabling bail (916-075x1). The bail was also widened slightly...which made it necessary to change the location of the two retainer grooves on the bail shaft (916006x1). The revised bail and shaft are illustrated on page B-12 revised. Note: The improvement described under item #5 of this supplement is also illustrated on page B-12 revised.

Page C-7

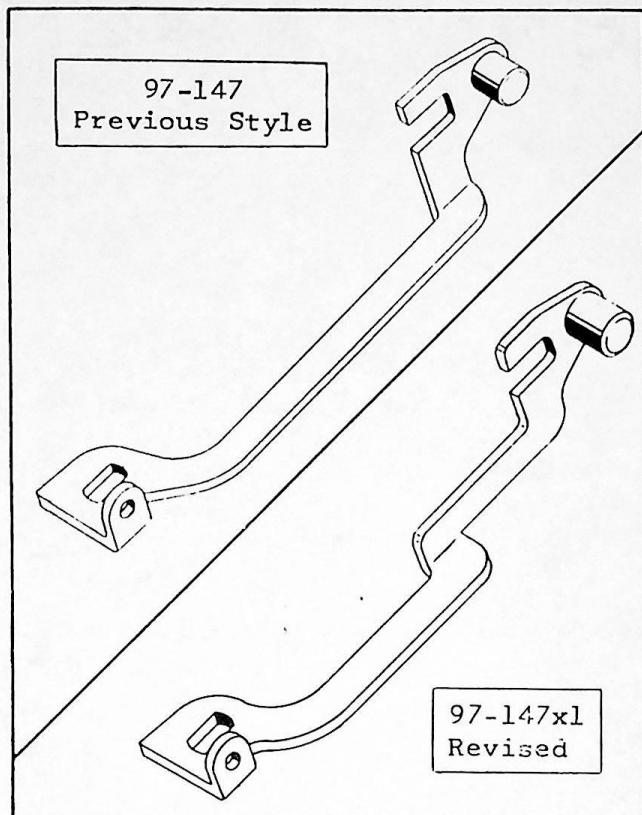
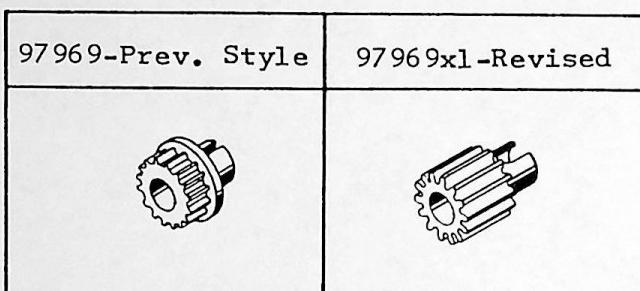
Change Part No. 97-147 to 97-147xl.

Part has been re-designed to clear the 97148 rack. Note: This  $\frac{1}{2}$  cent decimal sensing latch used on 211PC193 models only.

Page E-11

Change Part No. 97969 to 97969xl.

Gear teeth have been re-designed and made wider to accomodate the 97148 rack teeth.



Installation of this improved mechanism in production machines began with serial no. B-980594.

This mechanism should be installed only in those field machines which have a history of frequent auxiliary trip spring re-adjustment.

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#### #5 New Yielding Block Arm on Hold-Up Link

(Ref. C.D. P-820)

Page B-12

Revised Parts are Illustrated on Page B-12 Revised.

The blocking arm of the hold-up link 96-079x2 has been re-designed so that it can yield, under spring tension, in the event a malfunction or misoperation causes the hold-up latch disabling lever to be programmed while the blocking arm is positioned over the lug of the hold-up latch extension arm (96-056). This will eliminate the possibility of forcing the extension arm out of adjustment in such cases.

Installation of these parts in production machines began with serial no. B-980430.

Installation in field machines is NOT recommended unless there is a severe and continuing history of difficulties of the nature described above...or if it is necessary to install the improved main cam shaft (#1 in this release). If this improved hold-up link is installed, then the improvement described under #6 in this release must also be installed.

## #6 Improved Hold-Up Release Action

(Ref. C.D. P-820)

Page B-2

Change Part No. 96-072x1b to 96-072x2a

Page M-2

Change Part No. 911-066x1b to 911-066x2\*

WHEN ORDERING THIS PART  
ALSO ORDER A NEW CAM-#

The roller, on the arm of the hold-up latch...which operates into a notch in the carriage return cam hub...has been replaced by a plastic tip. The notch in the cam\* has also been re-designed to operate properly with the plastic tip. This has been done to keep the hold-up

latch fully positioned for the maximum time and then provide a quick and positive release. This will eliminate the somewhat gradual release which occurred with the roller...and which could result in partial release in mult. transfer operation before the hold-up link had moved fully into blocking position. This change will also contribute further to eliminating the previously critical nature of the auxiliary hold-up trip spring adjustment (see also #4 in this release).

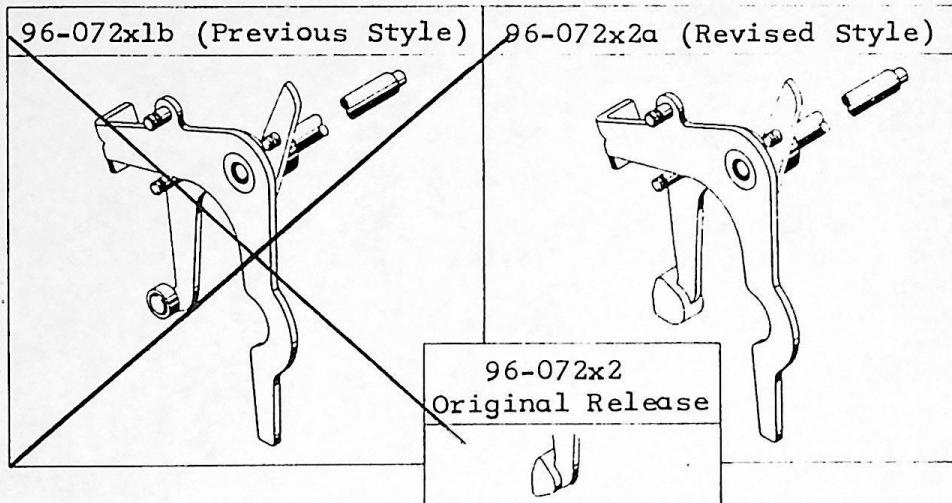
\*This cam is included in the revised main cam shaft described in #1 of this release....If it is installed separately, on a main cam shaft in a machine, the pin holes should be aligned, reamed and an oversize taper pin installed (use repair pin 'A', cut off both ends, and grind flush with hub).

Installation of the revised parts in production machines began with serial no. B-980353.

Installation in field machines is NOT recommended unless there is a severe and continuing history of difficulties of the nature described above...or if it is necessary to install the improved main cam shaft (#1 in this release).

Note: Some difficulty had been encountered with loosening or breaking off of the plastic tip described above as originally released. (See inset... 96-072x2). To overcome this, the tip has been strengthened considerably and the problem eliminated\*\*.

\*\*CAUTION: Turning the handcrank (K.T. #340) backward was found to be one of the most frequent causes of such breakage. The handcrank should never be turned backward (counter-clockwise as viewed from left) on this machine.



## #7 Revised Carriage Return Cable Drum Arm

(Ref. C.D. P-827 &amp; P-838)

Page B-1

Change Part No. 97-915c to 97-915e

Page B-4

Make the changes shown in the "previous style" illustration.

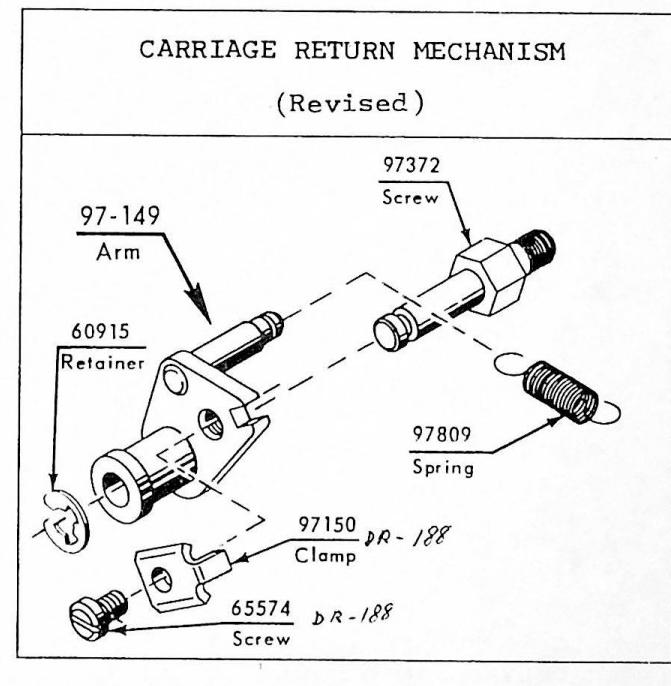
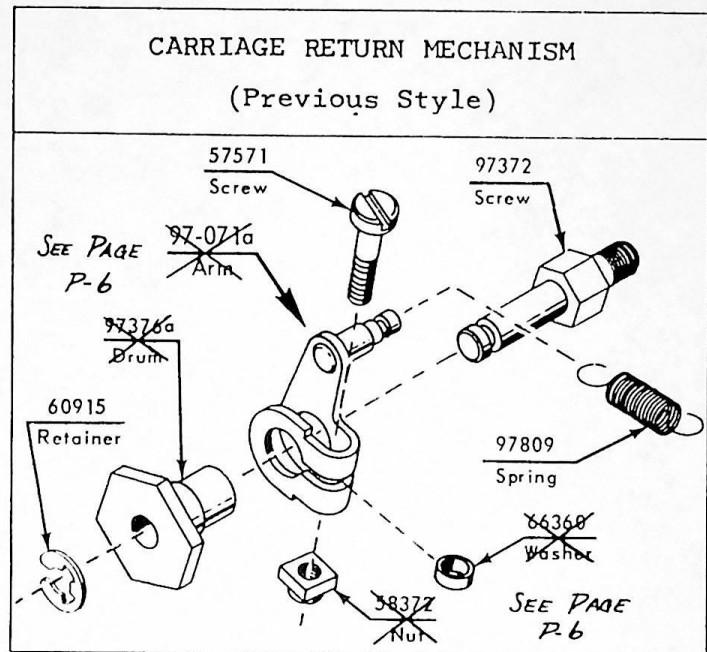
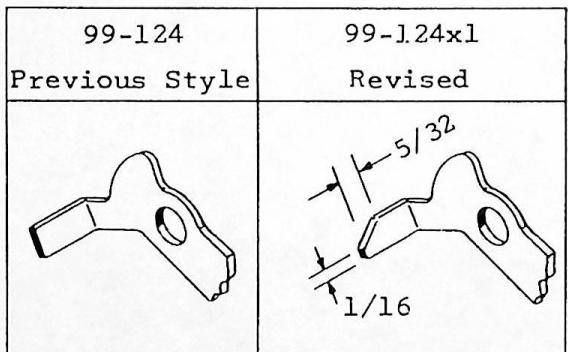
Page D-7

Change Part No. 99-124b to 99-124xl

The previous style cable drum (97376) and mercedes clamp arm (97-071a) have been replaced by a single assembly 97-149 which combines both parts.

The carriage return cord 97-915e has been lengthened for use with the new assembly and it is now secured by a flat clamp 97150 and screw 65574 to the new arm (as shown below). This has been done to eliminate both the slipping of the previous clamp arm on the drum, which necessitated re-adjustment, and the fracturing of the clamp arm from over-tightening.

The lower lug on the left end of the decimal bail 99-124xl has been clipped for clearance with the new style clamp arm.



To avoid the necessity of replacing the decimal bail when the new style 97-149 clamp arm is installed, the lug of the decimal bail in the machine should be filed to the "xl" specifications as illustrated.

Installation of these parts in production machines began with serial no. B-980430.

This change MUST be incorporated in all machines in branch stock before delivery to a customer...customer machines should be updated on the next service call or maintenance inspection....EXCEPTION: As an interim improvement (before the new parts were available) a number of machines were produced with annealed cable drums. These soft drums permitted the clamp arms to get a good "bite" and have proven very satisfactory. (NOTE: A Thinner spacer, part no. 66360 special, was also used, with the annealed drums, between the jaws of the clamp arm).

The annealed drums are easily identified by their jetalized (black) finish. It is NOT necessary to update machines which have the annealed drum.

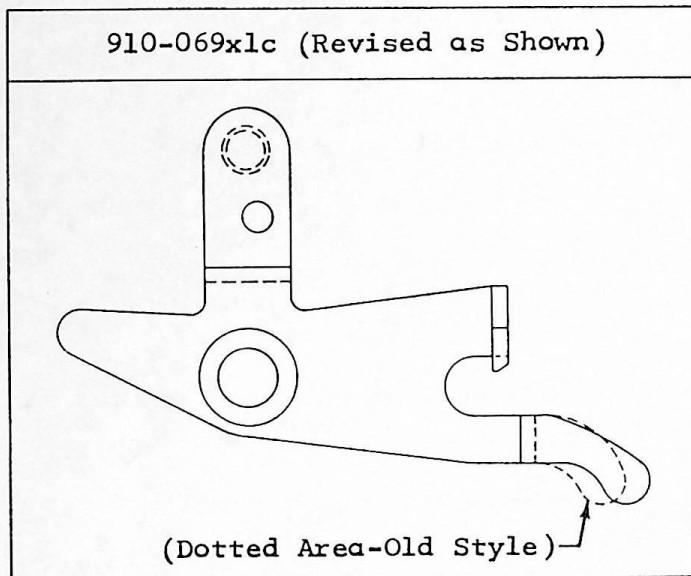
NOTE: A small supply of the annealed drums (97376a special) and spacers (66360 special) are available on requisition. These can be used in lieu of the other updating parts while the supply lasts.

#### #8 Improved Switch Release Ratchet Pawl

(Ref. C.D P-820)

Page M-1

Change Part No. 910-069xlb to 910-069xlc



The shape of the lower lug of the ratchet pawl 910-069xlc has been revised to prevent raising of the back space pawl 910064 when the switch closing cam 910953xl is being returned to neutral.

In some instances the back space pawl was raised slightly by the ratchet pawl, causing an unsatisfactory tooth "hold" which resulted in excess wear on the ratchet teeth of the switch closing cam.

Installation of the improved pawl in production machines began with serial no. B-976087.

An improved pawl (and a new switch closing cam) should be installed in field machines when wear of the ratchet teeth is encountered.

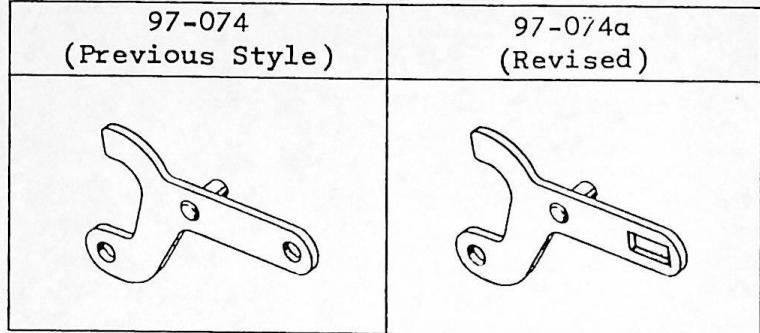
## #9 Improved "Soft Lock" Links

(Ref. C D. P-820)

Page E-11

Change Part No. 97-074 to 97-074a

The "soft lock" links 97-074a for both the selector and multiplier decimal capacity locks have been revised. The revision is simply a change from a round hole to a slot at the point where the links connect to the multiplicand and multiplier bails. This will eliminate a conflict between the "hard" and "soft" locks of the two mechanisms which could occur with certain unusual decimal settings.



This conflict would occur if the whole number capacity of one mechanism were exceeded (activating its "hard lock") and the decimal capacity of the other mechanism...but not its whole number capacity...were also exceeded. If one of the keys, whose decimal capacity had been exceeded, were then firmly depressed...the opposing active "hard lock" could restrict movement of the "soft lock" linkage enough to permit tripping of the main shaft clutch. The main shaft would then advance to holdup position and stop...with the motor running.

The change to slotted holes eliminates this possibility by permitting the links to move forward on the studs of the multiplicand and multiplier bails. If one of the bails is prevented from moving by its "hard lock", movement of the "soft lock" linkage will not be restricted.

Installation of revised parts in production machines began with serial no. B-980185.

Updating of field machines will not be required, except in cases where the problem described above has been experienced.

## #10 Strengthened Decimal Shafts Detent Spring

(Ref. C D C-826)

Page E-9

Change Part No. 581 to 581a

The diameter of the wire used for the plunger springs 581a which detent the decimal shafts has been increased from .010 to .012. This has been done to provide a more positive detenting action for the decimal control knobs.

Installation of the strengthened springs in production machines began with serial no. B-881208.

Updating of field machines is NOT recommended unless the decimal unit must be disassembled for some other reason.

---

#11 Improved Selectors

Page J-6

Above the Selector Part No. (92-2000x1) write: "See Page P-9".

Improvements in manufacturing inspection techniques have resulted in the production of selectors in which the control of zoning and over-all quality and reliability has been improved.

The part no. (92-2000x1) of these improved selectors has not been changed....They are identified by a marking of blue dye across the teeth of the "fixed" gears.

Installation in production machines began with serial no. B-980761.

Improved selectors should be installed ONLY in those field machines which have a history of miscals related to critical selector adjustment. (See also #12 of this release).

Previous style selectors should be returned for credit.

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#12 Improved Register Units

Page J-2

Above the Register Part No. (92-2001) write: "See Page P-9".

The end play of intermediate gears, in register units of current manufacture, is being held to a closer tolerance (.003 max.). This improved zoning control, along with similar selector improvement (#11 of this release) will provide improved reliability and a less critical selector adjustment.

There is no change in the part no. (92-2001) of the register unit....Improved units are identified by a marking of blue dye on the hub at top of left end plate.

Installation in production machines began with serial no. B-980376.

Improved register units should be installed ONLY in those field machines which have a history of miscals related to critical selector adjustment...and in which this problem was not eliminated by installation of the improved selector.

Previous style register units should be returned for credit.

---

#13 Improved Accumulators

(Ref: C.D. P-825 & P-834)

Page H-8

Above the Accumulator Part No. (94-4001) write: "See Page P-9"

Change accumulator sub-assembly shaft part no. 94-952x3b to 94-952x3d and under this part no. write: "For reference only, do not order".

Under the words "Right End Block", in the Timing Diagram in the upper right corner of the page, write: "70902 Pin (2 used)".

Two improvements have been made in this part...and these improvements are therefore incorporated in the latest 94-4001 Accumulators. (Note: Replacement of the accumulator shaft sub-assembly is not recommended....Replace the complete accumulator.)

First, the plastic block on the right end is now drilled and pinned (part no. 70902 pin) to the shafts. This has been done to eliminate any possibility of the block moving on the shaft.

Second, a more durable plastic material is now being used for both the right and left end blocks on this shaft. The superior stress-resistant characteristics of this new material will greatly improve the reliability of these parts.

Accumulators with end blocks of this latest material are temporarily being identified by painting the outer face of the blocks with a blue dye. All accumulators presently in Orange stock, and all those received in the future (whether painted or not) will contain these improvements.

Installation of the improved accumulators in production machines began with serial no. B-980157.

Improved accumulators (94-4001) must be installed in all prior machines in Branch stock before delivery to a customer,...Updating of customer machines with the improved accumulator is also recommended.

Field stock of previous style accumulators (94-4001), and all such previous style accumulators removed from machines, should be returned to Orange for credit. Any field stock of accumulator shaft sub-assemblies (94-952 x 3 etc.) should also be returned for credit. These sub-assemblies should not be reordered.

---

#### #14 Improved Program Cam Shafts

(Ref: C.D. P-830, P-832, P-834 & P-837)

Page D-11

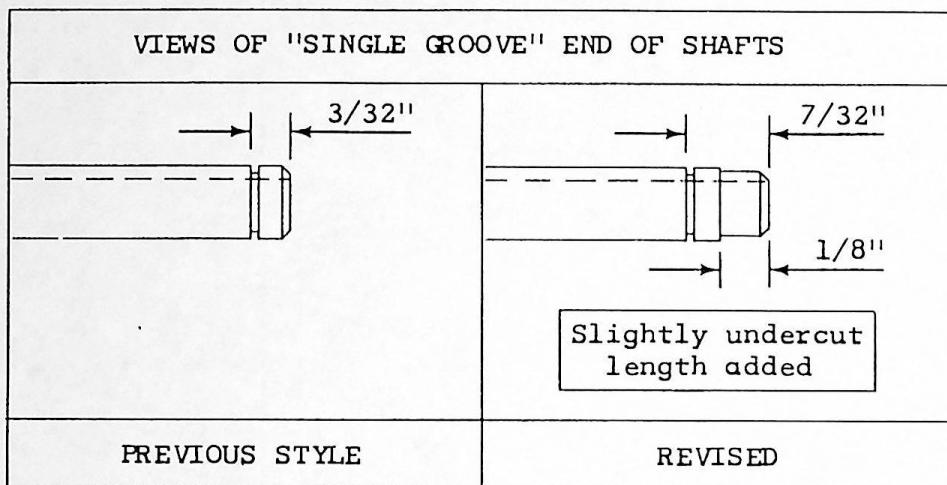
Change part no. 99-004xlc to 99-004xle

Change part no. 99-014c to 99-014d

Change part no. 99-020 to 99-020a

Two improvements have been made on the division program cam shaft (99-004xle). First, the three cams which operate program slides #13, #14 and #15 are now being moulded in a one piece cluster. (Previously they were three separately moulded pieces.) This has been done to provide additional strength. The second improvement consists of a change to a more durable material for the cams and the addition of a very slight radius to the inner corners of the cam keys...also to provide additional strength and eliminate breakage. This second improvement (material changed and radius added) has also been made on the regular multiplication (99-014d) and the  $\frac{1}{2}$  cent multiplication (99-020a) program cam shafts.

All three improved program cam shafts are easily identified by their shaft length....They are about 1/8 inch longer than the previous style (NOTE: This change in length was made to facilitate installation of the cams on the shaft in production and it is not directly related to the reliability improvements described above. However, since the longer shaft is being incorporated at the same time as the other improvements, we can use it as a means of identifying the improved parts.)



Installation of revised program cam shafts in production machines began with serial no. B-980397.

These improved shafts must be installed in all prior machines in Branch stock before delivery to a customer....Updating of customer machines with the new shafts is also recommended....In any case; whenever one of the previous style shafts is replaced, the other previous style shaft/s should be replaced at the same time.

Field stock of previous style program cam shafts and all such previous style shafts removed from machines, should be returned to Orange for credit.

---

#### #15 Improved M/Q Decimal Programming

(Ref. C.D. P-838)

Page F-11

Change Part No. 97-008a to 97-008c and below Part No. 97-008c  
add: 63749 Screw.

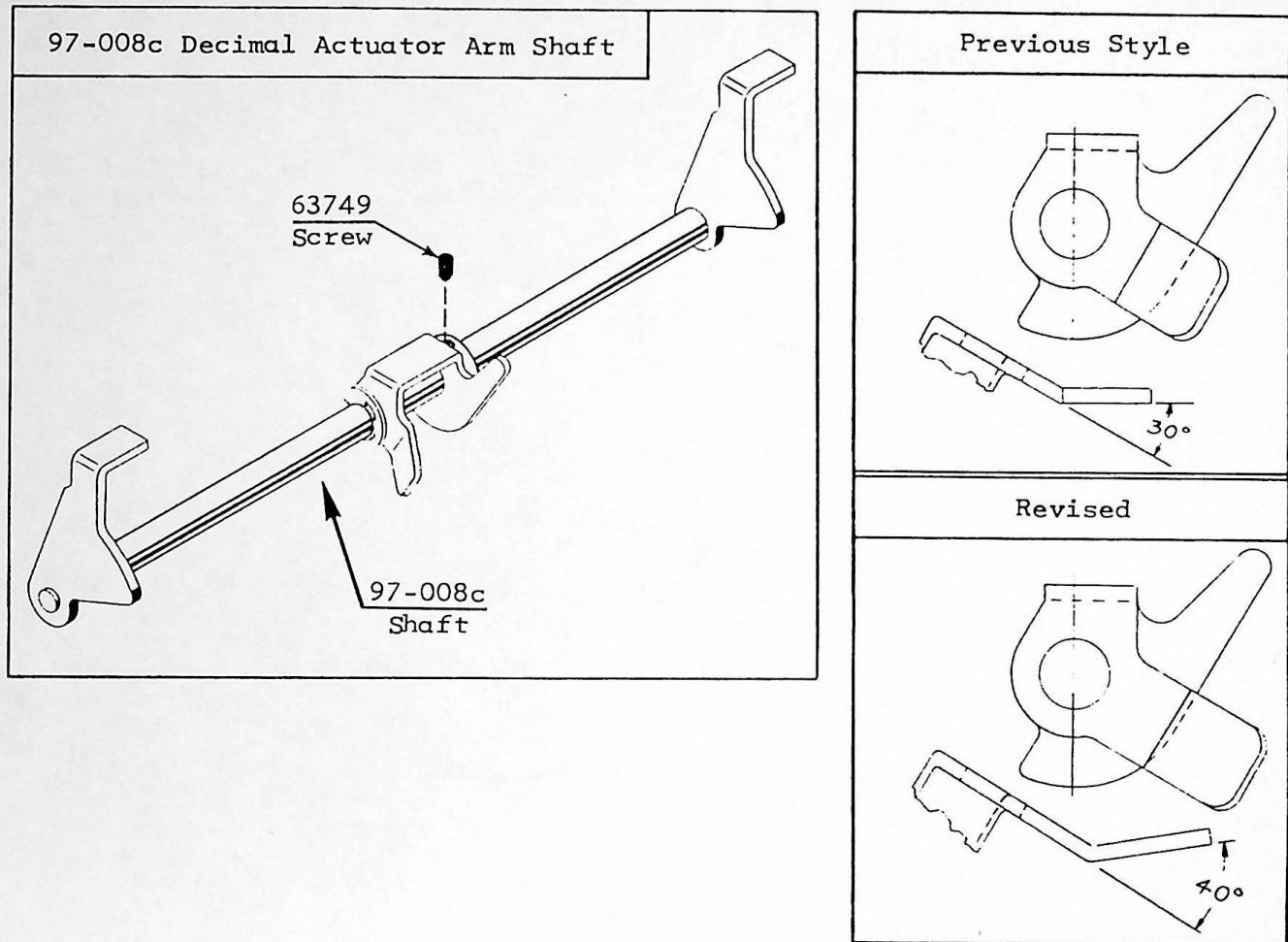
Page M-3

Change Part No. \*97-101x1 to 97-101x1a

A 60915 retainer has been removed from the decimal activator arm shaft 97-008c and a collar, 56381 (not replaceable), and set screw, 63749, have been added.

Collar and set screw have been added to this assembly to eliminate all end play of the cam bail.

The angle of the camming extension on the cam bail of the decimal actuator arm shaft has been changed from  $30^\circ$  to  $40^\circ$ . The point at which this angle forming starts has been moved further from the shaft center.

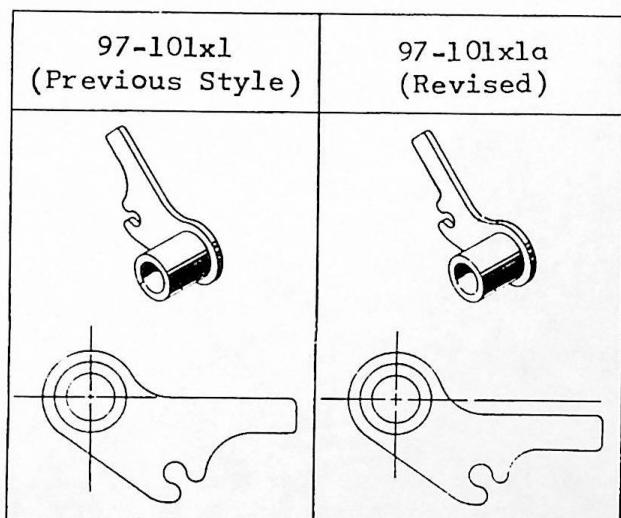


The decimal intermediate arm 97-101xla has been revised to operate properly with the changed cam bail. These changes have been made to insure full positioning of the actuator arm shaft in decimal programming for multipliers and quotients.

\*NOTE: The hub of this part has also been shortened for use with the new main cam shaft brace (see #1 of this release).

Installation of this improvement in production machines began with serial no. B-980353.

Updating of field machines is NOT recommended (unless a new main cam shaft, with brace, is being installed).



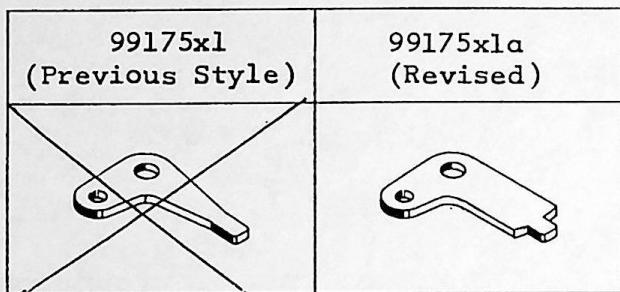
## #16 Improved Program Feed Lever

(Ref. C.D. P-838)

Page D-5, M-3

Change Part No. 99175xl to 99175xla

The shape of the end of the program feed lever 99175xla...the end which engages in the program feed plate...has been revised. This end now has a "shoulder" on both sides of the operating tip which will prevent the feed plate from moving closer to the pivot point of the lever. This will eliminate a cause of lost motion in the program feed mechanism.



Installation of the improved lever in production machines began with serial no. B-980403.

The improved lever should be installed in any field machines in which difficulty with obtaining full program feed has been experienced.

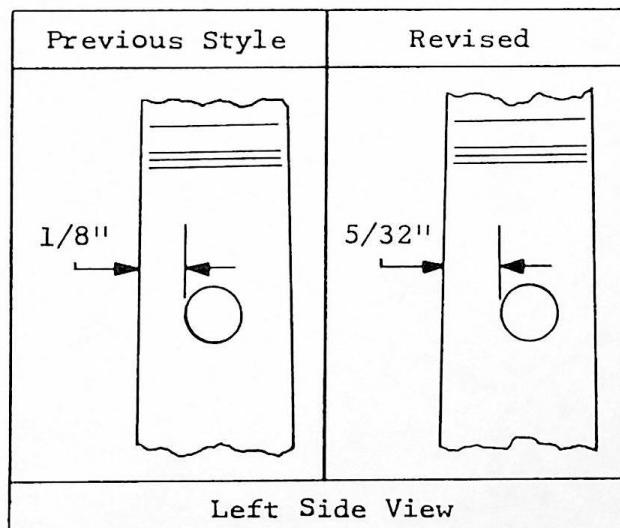
## #17 Eliminating Set-Up Carriage Reset Link "Cramp"

(Ref. C.D. P-838)

Page B-5

Change Part No. 913-069xlb to 913-069xlc

The location of the hole, for the eccentric stud, in the rear pulley arm has been moved slightly forward to eliminate a possible cramping condition which could occur when this pulley arm was driven fully rearward by the carriage return cam. This will also provide more latitude for adjusting the eccentric stud...which carries the set-up carriage reset link.



Installation of this part in production machines began with serial no. B-980252.

It is not necessary to update field machines with this part....Field machines, in which the cramping condition is encountered, can be corrected by installing a smaller roller (part no. 911484) on the carriage return cam follower, 913-070.

#18 Cancelled Revision to Equalizer Cam

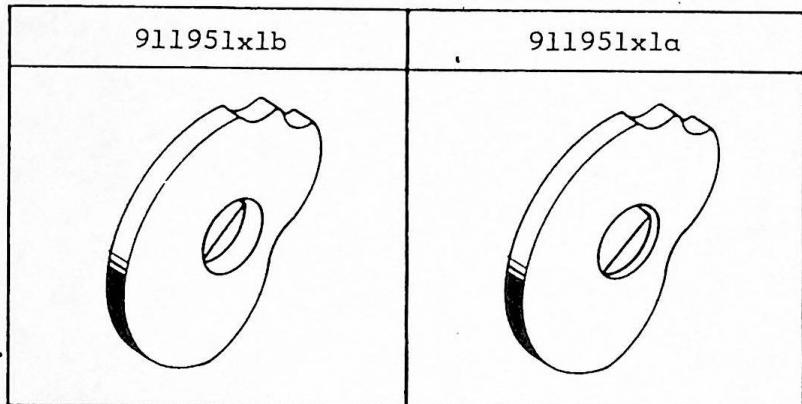
Page M-1

Below part no. 911951xla write: "See Item #18, page P-14".

In approximately mid-year, 1963, the equalizer cam was revised and its part no. changed to 911951xlb. The revision consisted of a counter-bore operation which shortened the length of the flat surface inside the hub of the cam. This was done so that the length of the flat coincided with the then length of the right end of the main shaft which extended from the right frame bearing.

In October 1966 the length of the main shaft was increased so that its right end coincided with the flat of the equalizer cam as originally designed. The counter-bore operation was thus eliminated...the "b" change was cancelled...and the part no. reverted to the previous 911951xla.

Note: When a revised main cam shaft (911-002x6) is being installed (item #1 of this release), check the equalizer cam on the old main cam shaft....If it is a counter-bored equalizer cam, (911951xlb), it will have to be replaced by one that is not counter-bored (911951xla) to properly fit the revised shaft.



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7/21/67

Please insert this supplement (pages P-15 thru P-22) in proper sequence in your copy of C.S.B. #P2-501.

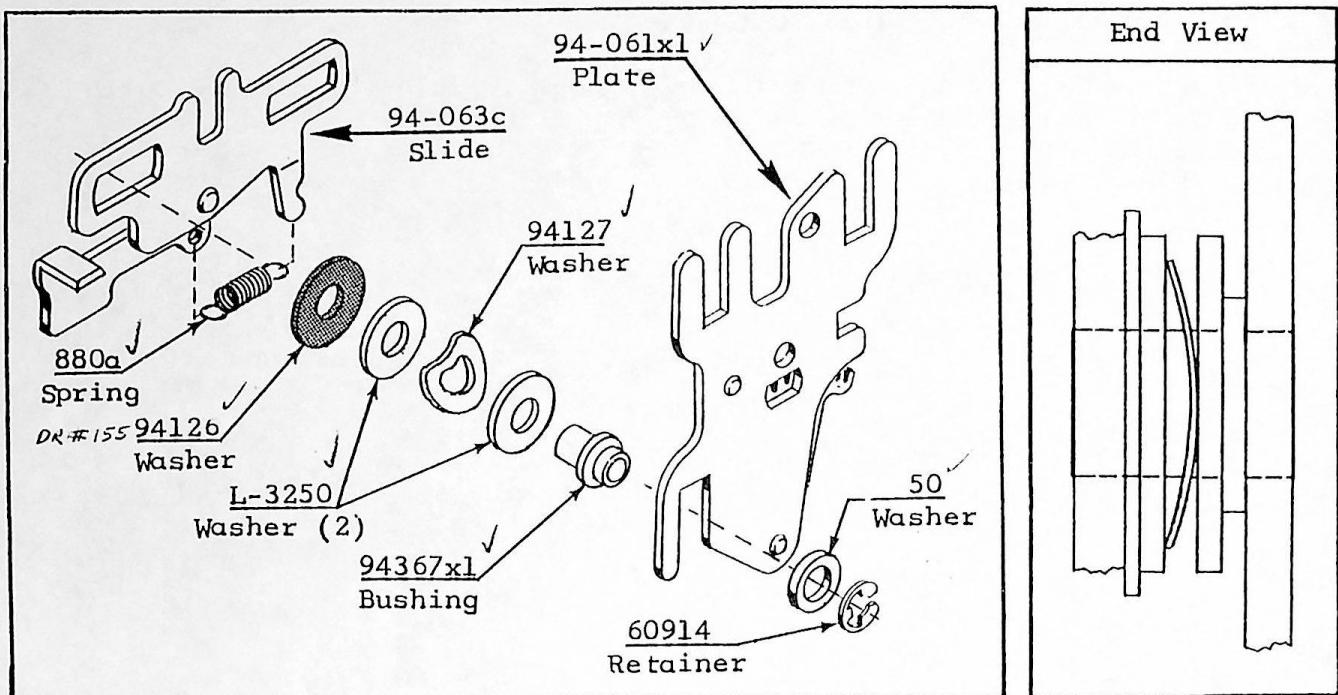
### #19 ACCUMULATOR POSITIONING FRICTION CONTROL

Page H-5

(Ref. C.D. P-851)

Change part no. 94-061c to 94-061xl and above this, write: See Item #19, page P-15.

Change part no. 94367 to 94367xl and below this, write: See Item #19, page P-15.



A light friction load has been added to the accumulator reversing slide to eliminate jumping away from plus or minus positions when accumulator re-positioning is not called for.

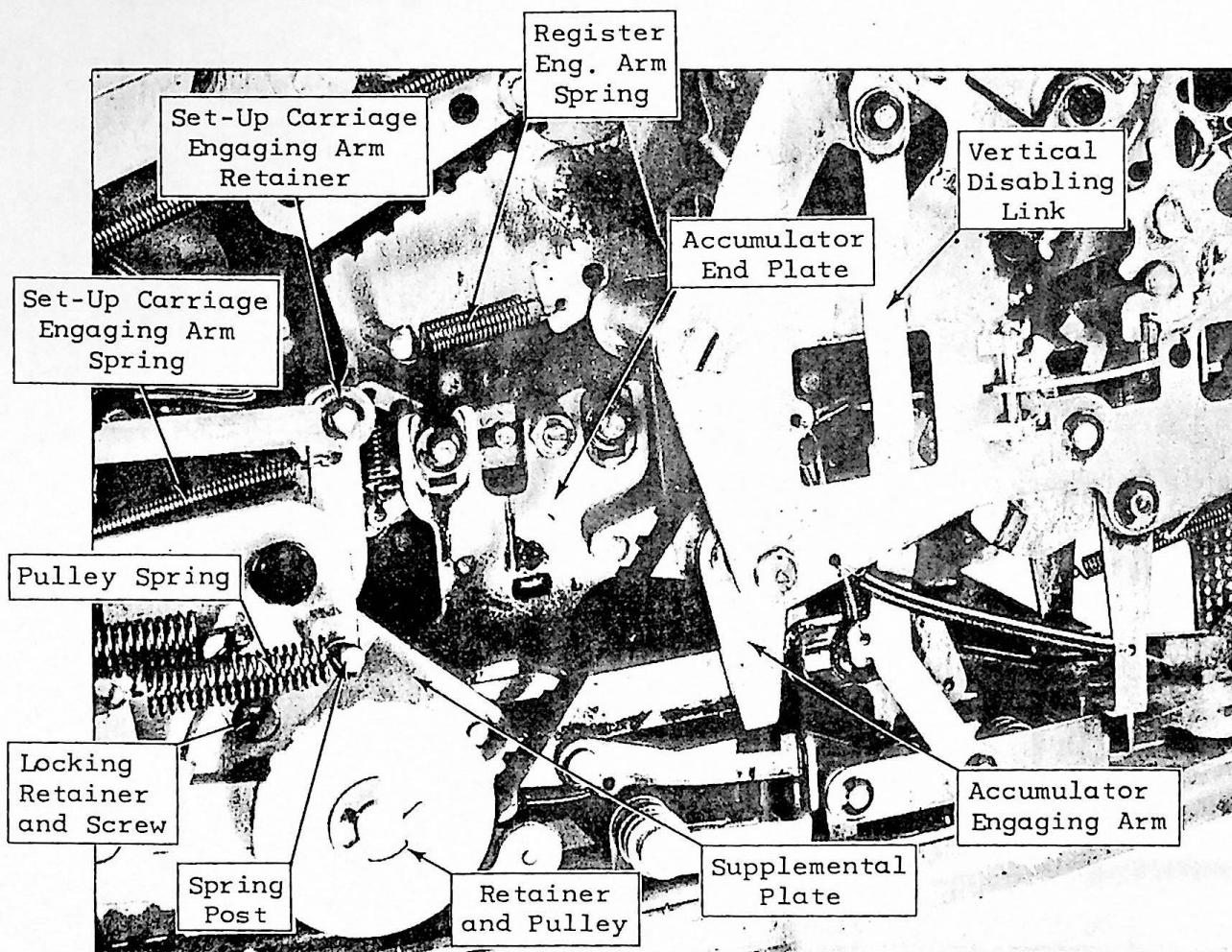
The lower slot in the 94-061xl support plate has been widened and lengthened to accommodate the new hub on 94367xl bushing.

#### INSTALLATION PROCEDURE (Machine in Neutral)

- 1) Remove retainer on Set-Up Carriage engaging arm.
- 2) Remove retainer on belt pulley. Remove pulley and pulley spring.
- 3) Disconnect Set-Up Carriage engaging arm spring.
- 4) Remove locking retainer, spring post and supplemental plate.
- \*5) Remove shaft for Set-Up Carriage engaging arm. NOTE Spacer.
- 6) Remove accumulator end plate (3 Retainers, 3 Washers). NOTE Accumulator shim.

- 7) Loosen Accumulator engaging arm, slide laterally from under #2 and #3 operating slides. Position upward, out of the way.
- 8) Disconnect Register engaging arm restoring spring.
- \*9) Remove retainers on #1 and #3 operating slides, front and rear.
- \*10) Disconnect restoring spring on #3 operating slide.
- 11) Remove vertical disabling link. (2 Retainers, 1 Washer, 1 Spring).
- 12) Disengage #3 operating slide, and with slight pressure clear forward guide post, remove slide from machine.
- 13) Remove spacer on rear guide post.
- 14) Disengage #2 and #3 operating slides, engage register with racks, with slight pressure clear guide posts, remove slides from machine.

\*Not visible in photo.



Install parts required as illustrated on page P-15.

Note: When installation of 94-061x1 Plate has been accomplished, inspect accumulator for maximum .005 side play. Shims must be installed to remove excessive play. (56072 shim washer .010, 58072 shim washer .005)

Reassemble parts removed from machine as listed, in reverse order being certain to readjust the following:

1. Accumulator Positioning Segment
2. Accumulator Centralizing Adjustment
3. Accumulator Engaging
4. Set-Up Carriage Engagement

This friction control should be installed in any prior machines in branch stock before delivery to a customer...installation in customer machines is recommended at the convenience of the branch.

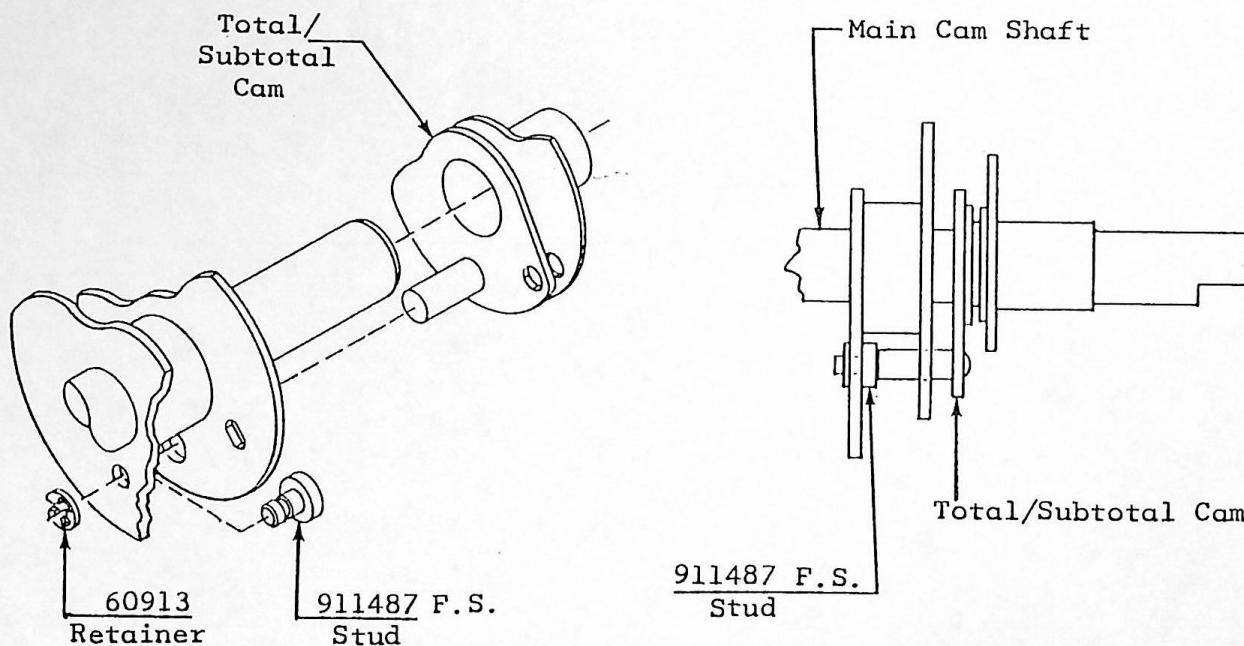
Installation of this improvement in production machines began with serial number B-981243.

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#### #20 TOTAL/SUB-TOTAL CAM LIMIT STUD

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A special stud which provides a fixed limit for the left (total) position of the total/sub-total cam is being used in current machines as an interim improvement. This fixed limit will eliminate the possibility of the cam being forced off the left edge of the cam follower roller. The special stud, part no. 911487 F.S., is available on requisition from Orange. It is installed in an existing hole of the right rack restoring cam as illustrated below and secured with a retainer, part no. 60913.



The stud should be installed in field machines in which the difficulty described above has been experienced.

NOTE: A permanent improvement, which will eliminate the necessity of installing the special stud, will be incorporated in production machines in the near future. With this improvement the stud in the total/sub-total cam will be lengthened so that it limits directly against the right rack restoring cam when in total position. The roller and roller stud on the total/sub-total cam follower will also be lengthened.

## #21 IMPROVED HAMMER LATCHES

(Ref. C.D. P-813)

Page F-5

Above parts 98-067d and 98-105d write: "See Item #21, page P-18".

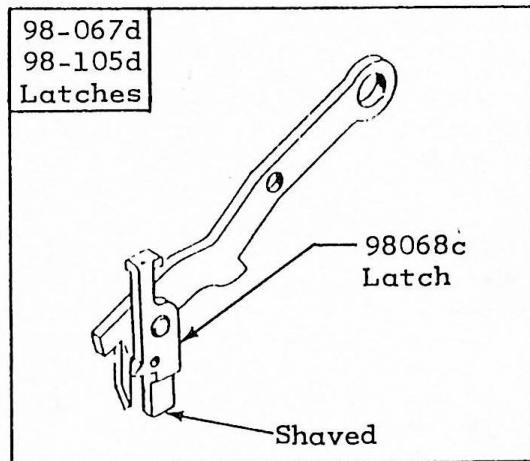
As previously mentioned in C.S.B. #P2-502, on page VI-D-32, occasional failure to print the high order digit of an amount has been reported on 461-S Service Record Forms. This problem has been traced to a slightly rounded latching surface on the hammer latch finger which can permit the finger to slide off the edge of the raising bail, (98-113).

An additional shave operation has been added to latch 98068c to eliminate the problem described above and to insure correct lower print action.

Parts 98-067d and 98-105d have this improvement.

It is not necessary to update field machines with this part unless the procedure outlined on page VI-D-32 of C.S.B. #P2-502 fails to correct the condition described above.

Installation of this improvement in production machines began with serial no. B-976545.



## #22 STRENGTHENED PRINT HAMMER SPRINGS

(Ref. C.D. P-773)

Page F-3

Change part no. 98803b to 98803c

A slightly stronger spring is now used to improve print density.

Installation in production machines began with serial no. B-880315.

## #23 HEX HEAD SCREW FOR ACCUMULATOR LIFT SHAFT ARM

Page H-4

Change part no. 2018e to: 40500 (Hex Head).

Because the screw driver slot in the fillister head (2018e) screw is not readily accessible in the assembled machine, this screw has been replaced by a  $\frac{1}{4}$ " hex head screw (40500).

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**#24 CATALOG CORRECTIONS AND ADDITIONS**

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Page A-5 (At top of page) Change Rubber Foot no. 9129503 to 912903a.

Page N-1 Change Spring no. 781 to L-781.

Pages E-8, N-2 Change Spring no. 4807 to L-4807.

Page N-2 Change Spring no. 6833 to L-6833.

Pages L-6, N-2 Change Spring no. 7812 to L-7812.

Pages B-3, N-2 Change Spring no. 2750x1 to 2780x1.

Pages E-5, N-2 Change Screw no. 2721 to 2671.

Pages E-11, N-2 Change Spring no. 3807 to L-3807.

Page N-3 Change Ribbon no. 59903a to L-59903a.

Page N-3 Delete: 59960, Washer, K4

Page N-3 Delete: 64743, Screw, J-4

Page J-4 Change Screw no. 64743 to 64749.

Page N-3 Delete: 67388, Collar, E-11

Page E-11 Change Collar no. 67388 to 97388.

Page N-3 Change page no. B-14 for Spring no. 67826 to B-2.

Page N-4 Change Screw no. 91394 to 913394.

Page N-5 Change Keytop no. 93950/#0 to 93951a/#0.

Page N-5 Change Bail no. 94087 to 94087x1.

Page N-1 Delete: 18lx1, Spring, M-1

Page M-1 Change Spring no. 18lx1 to L-3853.

Page N-6 Delete: 95950a, Arm, C-8

Page C-8 Change Arm no. 95950a to 95950b.

Pages N-9, D-15 Change Pawl no. 99142b to 99142a.

Page N-9 Delete: 99183, Plate, D-10

Page N-8 Change page no. E-2 for Bar no. 98053b to F-2.

Page N-9 Delete: 910050x1a, Plate, E-3

Page N-9 Delete: 910051, Rack, E-2

Page N-9 910951a, Dial, E-3, M-6

Page N-10 Delete: 911803a, Spring, H-10

Page N-11 913006, Guide, G-4

Should read: 913006, Shaft, G-4

Page N-14 95-056a, Plate, C-1

95-057c, Bracket, C-1

Should read: 95-056a, Plate, C-2

95-057c, Bracket, C-2

Add the following information to the pages indicated. Part numbers should be inserted on the pages affected in proper numerical sequence.

Page N-11 9129503a, Roller, A-5

Page N-1 781 $\frac{1}{4}$ , Spring, H-9

Page N-3 64749, Screw, B-14, J-4

Page N-7 97388, Collar, E-11

Page N-4 91001a, Shaft, E-3

Page N-2 L-3853, Spring, M-1

Page N-9 910056a, Rack, E-2

Page N-14 95-5002, Lt. Keyboard, C-6~

Page N-10 912365x1, Screw, A-6

Page N-15 99-056x1a, Bail, D-17

Page N-14 Delete: 94-956x2, Slide, H-8

Page N-15 Delete: 99-057b, Bail, D-17

Page N-16 Delete: 912-908a, Roller, A-5

Page N-6 95950b, Arm, D-5

Should read: 95950b, Arm, D-5, C-8

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#### #25 HARDEDEN PLATEN SPACE BAIL STOP SHAFT

(Ref. C.D. P-854)

Page B-9

Change part no. 916007 to 916007a

Light Case Hardening has been added to reduce wear from 913-071b platen space bail.

Installation of this improvement in production machines began with serial number B-981650.

## #26 REVISED SHIFT BRACKET

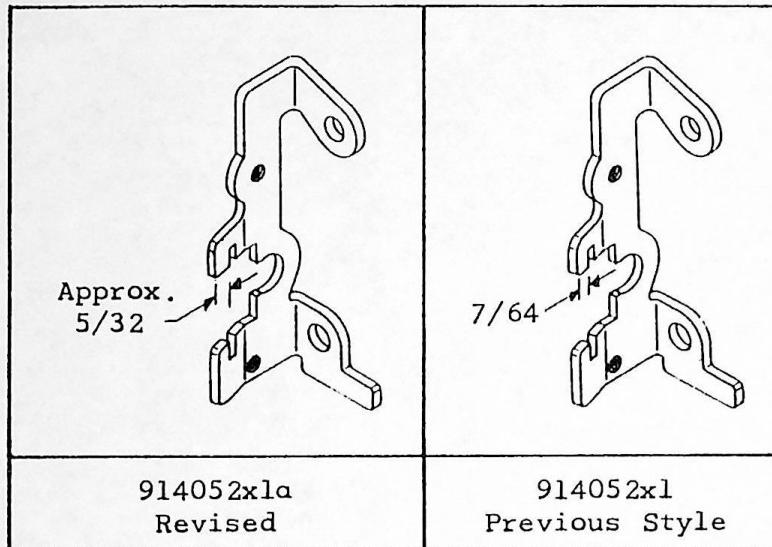
(Ref. C.D. P-820)

Page K-6

Change part no. 914052x1 to 914052x1a

Material has been added to the upper guide lug of the shift bracket (914052x1a) as illustrated. This will provide lateral support for the rear end of hold-up link (96-079x2) and eliminate possible cramping.

Installation of this improvement in production machines began with serial no. B-980670. Updating of previous machines will not be necessary.



## #27 HARDENED SET-UP CARRIAGE LIFTING SHAFT

(Ref. C.D. P-868)

Page E-2

Change part no. 91-004c to 91-016a

The 91016a shaft is hardened to prevent wear from the set-up carriage frame. This will help to prevent hesitation in carriage escapement, caused by a worn shaft, which could result in set-up errors.

91-016a shaft is now utilized in both Epic and PC models.

Installation in production machines began with serial no. B-981492. Updating not required unless a worn 91-004c shaft is encountered.

## #28 STRONGER ZERO TRANSFER BAIL

(Ref. C.D. P-865)

Page B-12 (Rev. 3-30-67)

Change part no. 916087b to 916087c

The stock thickness of the material has been increased from .032 to .040.

Installation in production machines began with serial no. B-981290. Updating of previous machines not required.

## #29 REDESIGNED DECIMAL CAM FOLLOWER DRIVING LINK

(Ref. C.D. #P-841)

Page F-11

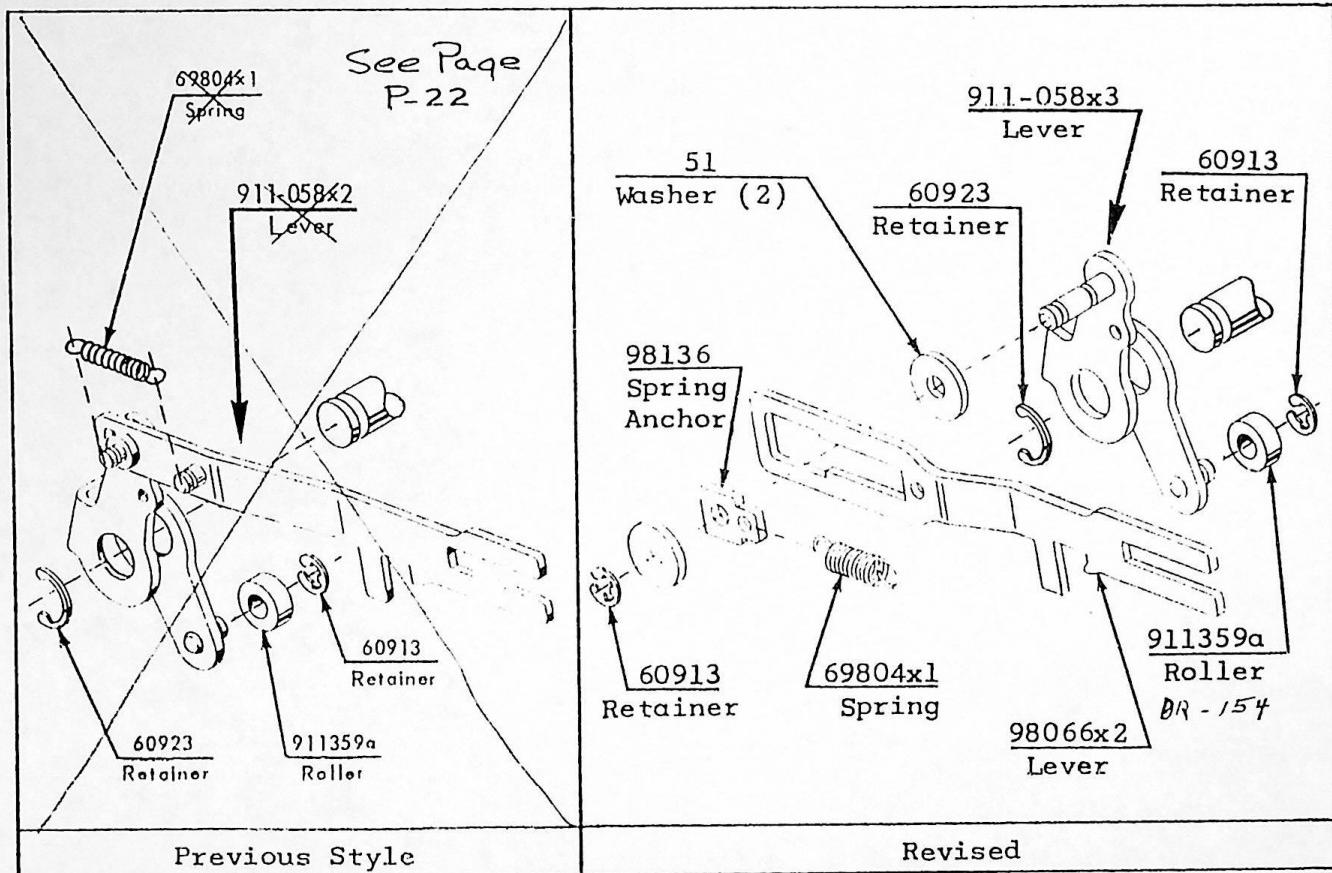
Make the changes shown in the "previous style" illustration.

The previous style driving link (911-058x2) has been replaced by the mechanism shown in the revised illustration. This has been done to eliminate the possibility of a bind between the driving link and the 98-064c decimal activator bail, which could cause improper decimal activation.

Such binds resulted from the lateral pull of the side mounted yield spring on the link. With the revised mechanism, the spring is axially mounted on the centerline of the link and the resulting straight line pull exerted does not tend to cock the link laterally.

Installation of this improvement in production machines began with serial no. B-981872.

Updating of field machines will not be required, except in cases where the problem described above has been experienced.



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Supplement of 1-30-68

This supplement, Pages P-23 Thru P-33, contains complete information to make your copy of models 211PC192 and 211PC193 parts catalog applicable to the 580 model.

Please post the part number changes in your catalog with reference to the supplement page on which the change or item number is described and insert the revised and additional pages in your copy of C.S.B./#P2-501 as directed.

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#30 580 Parts Information/Base Unit

(Ref.C.D./#P-881, 835, 862)

Pages D-17 and D-18

Mark your copy of page D-17 - "Previous Style" - for reference only, see D-17 and D-18 revised 1/30/68.

A copy of pages D-17 and D-18 revised 1/30/68 is attached to this supplement. Insert the revised page between D-16 and D-17.

Page D-17 illustrates the Base Unit used in PC1421 models. (912-1200)

Page D-18 illustrates the Base Unit used in 580 models. (912-1204)

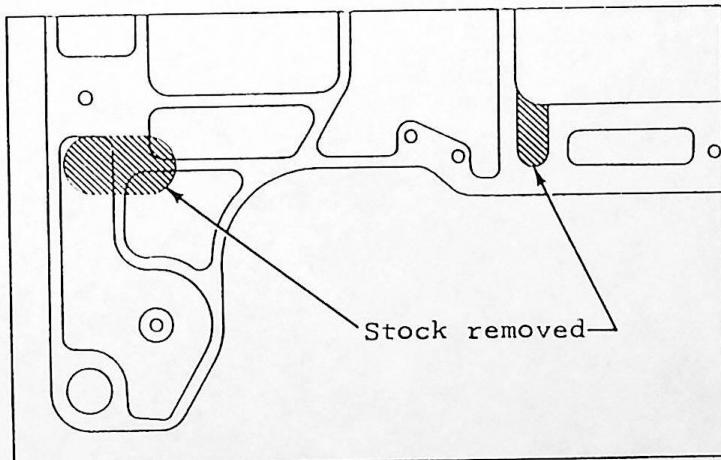
Both base units utilize parts previously acceptable for PC1421 machines only. The parts affected have recently been re-designed to accept the 580 mechanism. Page D-17 has been revised and re-printed to update your parts catalog. Page D-18 has been added to the parts catalog to illustrate the standard interchangeable parts as well as parts common only to the 580 model machine.

The following Base Unit information is given only to inform servicemen of the changes made to standard PC1421 parts for use with the 580 model and are not intended as directional remarks pertaining to the posting of such changes in C.S.B./#P2-501 since this has already been done for you on the reprinted pages (D-17 and D-18).

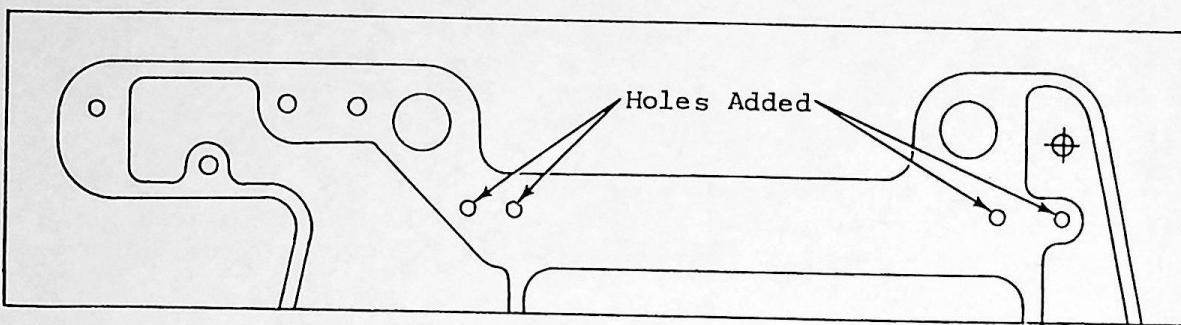
Changed Part No. 912900x1 to 912900x1b

(Ref.C.D./#P-881, 835, 862)

Stock has been removed from two areas on the base plate as illustrated. The large area provides additional clearance for the bellcrank which activates the 99133 tabulator trip link control slide. The smaller area provides clearance for the bell crank which activates the new Memory Recall control slide.



Four tapped holes have been added in the rear of the base plate which accommodate the support brackets for the new Memory Clearout and Memory Recall control bail's.



Both the 912-1200 and 912-1204 Base Units will utilize the 912900xlb base plate.

Changed Part No.'s 99068 to 99068a  
99067 to 99067a  
99066 to 99066a

Material was removed from the program slide guides above as required to accommodate program slides used in the 580 model.

All new parts released on page D-18 are as follows and should be inserted in their numerical location in C.S.B./#P2-501 parts list.

99258	Bracket
99259a	Bail
99260	Bail
99-250	Slide
99-251xl	Slide
99-253	Bracket
912-1204	Base Unit

---

#### #31 580 Parts Information/Program Unit

(Ref.C.D./#P-881)

Page D-1

Below Part No. 99-9002 add: 99-9006, Program Unit (580 Model) See Item #31, Page P-24.

Both program units utilize interchangeable parts. In some cases, however, parts are applicable to either the PC1421 or 580 program units. Parts have been re-designed or added as new parts to accept the 580 mechanism and are described on the next three pages.

## Page D-5 Base Plate

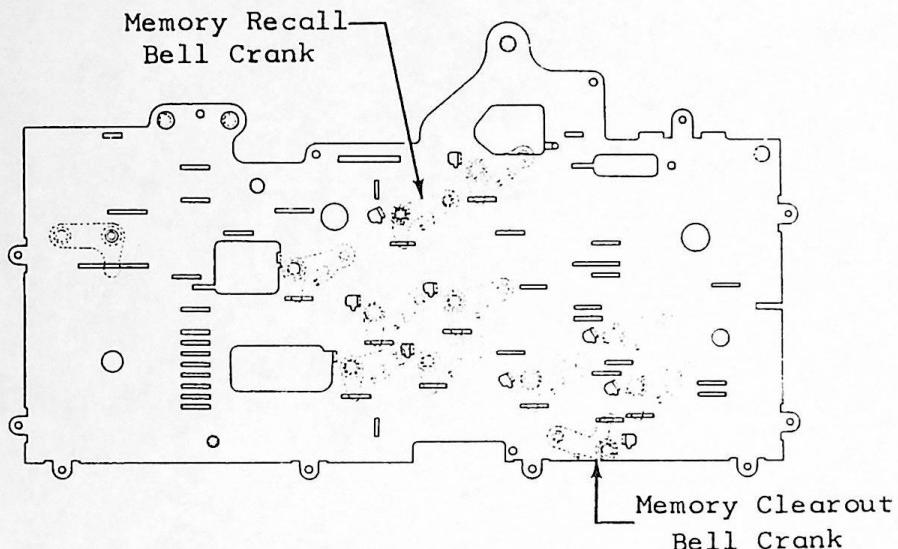
(Ref.C.D./#P-887, 835, 835-2)

Change Part No. 99-184x1a to 99-184x2 and above Part No. 99-184x2, add:  
99-255x1, Plate, See Page P-25.

Material has been removed from the 99-184x2 base plate blank in relation with the installation and operation of bell cranks required for use in the 580 model base plate assembly.

(Ref.C.D./#835-2)

The 99-255x1 base plate assembly has been released for use in 580 models. It is fitted with two additional program bell cranks...which activate the Memory Clearout and Recall control slides.



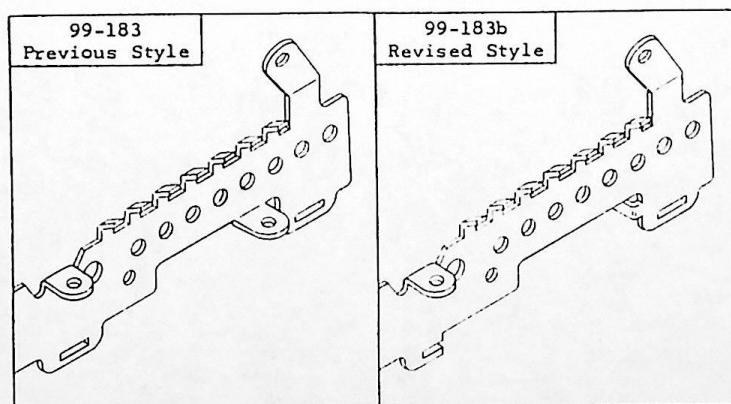
## Page D-5 Front Plate

(Ref.C.D./#P-835, 887)

Change Part No. 99-183 to 99-183b.

Stock has been removed from the front plate to allow passing clearance of the Memory Clearout Bell crank.

A tab has been removed from the right side of the front plate and a formed support lug added to prevent the #21 Memory Clearout program slide from bowing when activated.

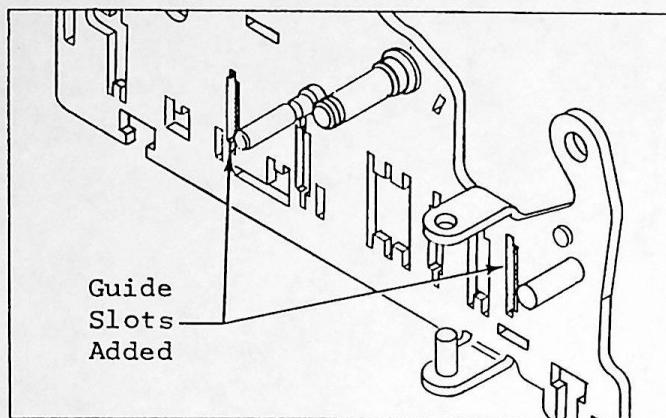


## Page D-5 Left Frame

(Ref.C.D./#P-835)

Change Part No. 99-137a to 99-137c

Guide slots have been added to the left frame to accept the #21 Memory Clear-out and #16 Memory Recall program slides.



## Page D-10 Program Bails

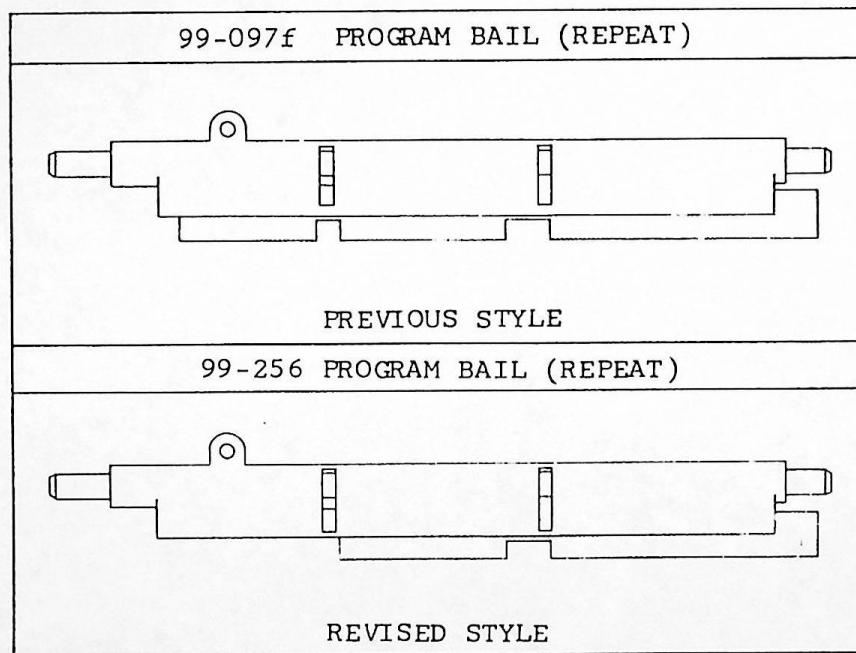
(Ref.C.D./#835-2)

Below Part No. 99-128h add: 99-261, Bail (580 Model)  
See Page P-26.

A celcon (plastic) Memory program bail (99-261) is provided for use in all 580 models. The 99-128h (metal) transfer program bail is used in all PC 1421 models.

Change Part No. 99-097f to 99-256

The 99-097f program bail has been modified for use in 580 models. The metal activating blade has been clipped to allow the #21 Memory Clearout program slide passing clearance. The new bail, 99-256, is now utilized in all models.



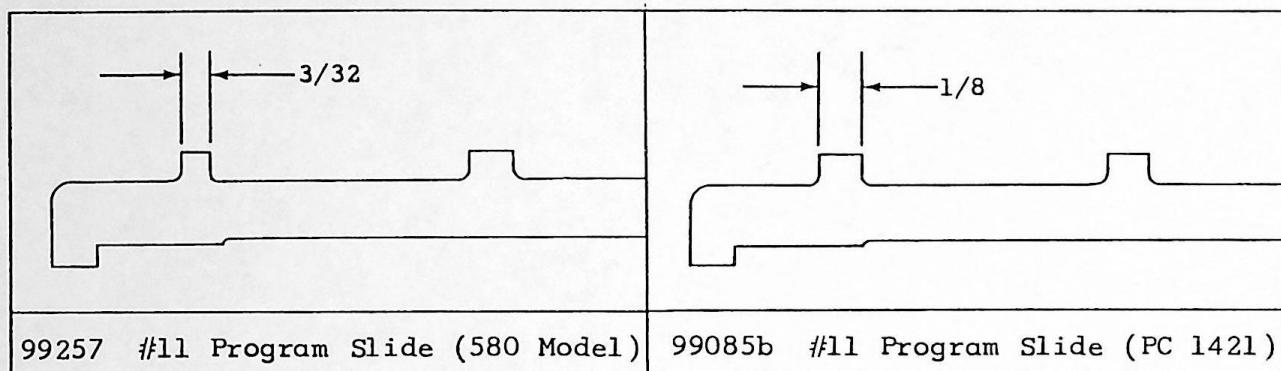
(Ref.C.D.#P-835-2)

## Page D-12 Program Slides

Below Part No. 99085b add: Slide 11, Part No. 99257 (580 Model)  
See Page P-27.

An additional #11 program slide, 99257, has been provided for use on machines containing the Memory mechanism.

Since the physical makeup of the transfer program bail and the memory program bail (both used in the same location, depending upon model) are different, a zoning change is necessary on the #11 program slide. (See illustration below of different slides).

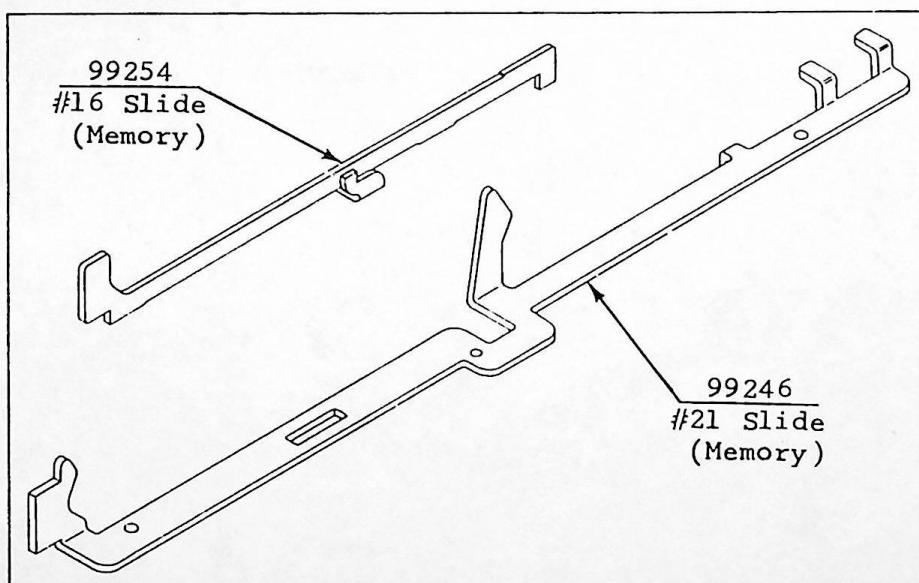


(Ref.C.D.#P-835-2)

Below Part No. 99257 add: Slide #16, Part No. 99254 (580 Model)  
See Page P-27.

Below Part No. 99254 add: Slide #21, Part No. 99246 (580 Model)  
See Page P-27.

The Memory Recall slide, 99254, and Memory Clearout slide, 99246, are new parts provided for use in machines containing the Memory feature.



## #32 580 Parts Information/Keyboard

(Ref.C.D./#P-835-2)

## Page E-1 Keyboard Bracket

Below Part No. 95-073x1a add: 95-138, Bracket (580 Model) See Item #32, Page P-28.

A stud which retains one leg of the toggle spring for the Total/Sub-Total lever (not used in 580 models) has been removed.

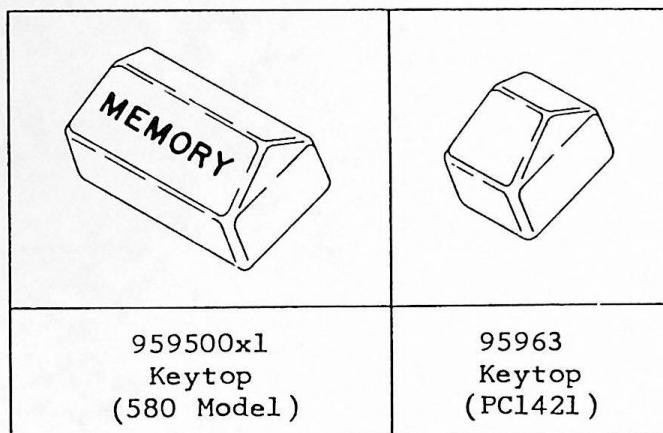
The new part, 95-138, is available for use in 580 models only...assemblies with the stud, 95-073x1a are interchangeable.

(Ref.C.D./#P-881)

## Page C-6 Left Control Keyboard

Above Part No. 95-5002 add: 95-5007, Left Control Keyboard, (580 Model) See Item #32, Page P-28.

The new Left Control Keyboard, 95-5007, is provided with a Memory keytop as shown below. The memory keytop is used in the same location as the transfer keytop.



Description of Left Control Keyboards available are as follows:

95-5001 - 211PC192  
Standard Keyboard-Transfer Keytop  
95-5002 - 211PC193  
1/2 cent Keyboard-Transfer Keytop  
95-5007 - 580  
1/2 cent Keyboard-Memory Keytop

(Ref.C.D./#P-835-4)

## Page C-9 Memory Keytop

To the left of Part No. 95963 add: 959500x1, Memory Keytop (580 Model)  
See Item #32, Page P-28.  
Also shown on Page C-11. (New this release)

## #33 580 Parts Information/Main Cam Shaft

(Ref.C.D./#P-835)

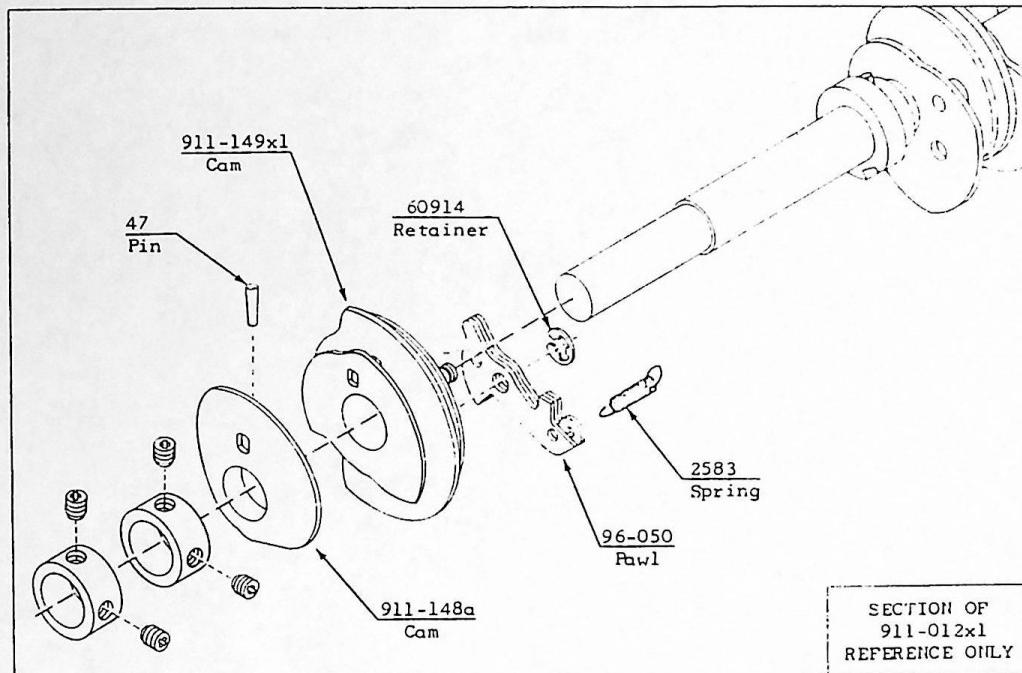
## Page M-2 Main Cam Shaft

Above Part No. 911-002x6 add: 911-012x1, Cam Shaft (580 Model)  
 See Item #33, Page P-29.

A new Cam Shaft is provided for 580 model machines.

The selector clearout cam, 911-148a, previously part of the Selector Set-Up Cam cluster (three cam cluster) has been removed from the cluster and pinned to the Main Cam Shaft so it rotates on all low speed machine cycles. The cam will now be referred to as the Selector/Memory clearout cam.

The Selector Set-Up cam cluster, 911-149x1, now a two cam cluster, will be trapped on the Main Cam Shaft by the Selector/Memory clearout cam, and the drive gear for the selector set-up cams.... Therefore, part number additions to the parts catalog pages pertaining to the new cams are not necessary as all parts referred to are included in assembly 911-012x1.



The illustration is provided for reference only and will serve as a guide for the change described above.

(Ref.C.D./#P-835,835-1)

## Page M-3 Cam Follower Shaft Lever

To the right of part no. 911-060a, add:  
 911-150, Lever (580 Model) See Item #33, Page P-29.

A new Lever, 911-150, is provided for Selector/Memory clearout in 580 models and is illustrated on page H-11. (Page H-11 New this release).

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**#36 580 Parts Information/New Catalog Pages**

Attached to this supplement are pages H-11 and H-12. This additional parts catalog page should be inserted after page H-10 in your copy of C.S.B./#P2-501. These pages contain the illustrated parts breakdown for the Memory Entering and Storage mechanism of the 580 model.

A note should be inserted on the "Table of Contents" page stating that the "Memory Unit" may be found in Section H.

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**#37 580 Parts Information/Cover Case**

Pages A-1 to A-5

In the upper left-hand corner of pages A-1 thru A-5 write: PC1421

Pages A-11 to A-15

New Cover Case parts have been designed for 580 models and are shown on pages A-11 to A-15 of this release. Please insert the pages in proper sequence in your copy of C.S.B./#P2-501.

Due to an increase in length and Cover Case color changes, the PC1421 and 580 model cases are not interchangeable.

Of the changes made to the Cover Cases, only one change affects both models and should be entered in your parts catalog as follows:

(Ref.C.D./#P-791)

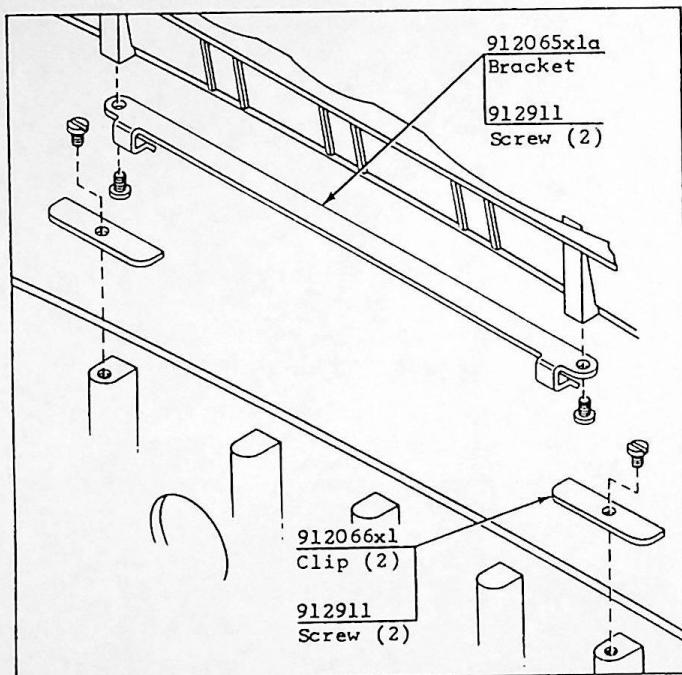
Page A-1

Change Part No. 912065 to 912065xla

Page A-4

Change Part No. 912066 to 912066xla

The rear bracket on the Rear Cover and the clips of the Bottom Cover have been re-designed to improve the locking action of the Covers.



The 912066xla clips must be used with the re-designed 912065xla brackets.

**-CAUTION-**  
(Ref.C.D./#P-858)

An improvement has been made to the 580 model to insure positive locking of the keyboard cowl to the Bottom Cover. The previous 912803 springs have been removed and have been replaced by the 912109xl latch illustrated on page A-14.

Care must be taken to unlock this latch before attempting to remove the cowling. Failure to do so, and exerting excessive pressure will cause the upper latching lugs to break from the cowl.

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**#38 580 Parts Information/Packing**

(Ref.C.D./#P-881)

Pages A-7 and A-9

Packing pieces and dust cover have been redesigned to accommodate the larger case of the 580 model.

Page A-7

Above Part No. 912919 add: 9129025 Brace (580 Model)  
Above Part No. 912918 add: 9129024 Collar (580 Model)  
Above Part No. 912917 add: 9129026 Yoke (580 Model)  
Below Part No. 912916 add: 9129027 Yoke (580 Model)

Page A-9

Above Part No. 912914 add: 9129023 Carton (580 Model)  
Below Part No. 912913c add: 9129028 Dust Cover CC-12 (580 Model)

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**#39 580 Parts Information/Keytops**

(Ref.C.D./#P-881)

Page C-11

Page C-11 is attached to this supplement to identify the keytops utilized by the 580 model. Insert the page in proper sequence in your copy of C.S.B./#P2-501.

The tints and colors of the 580 model keytops are different from those used on the PC1421 model and therefore are not interchangeable.

The platen space control lever and platen release lever have been changed in color from unpainted pearl grey plastic to unpainted dark grey plastic.

The upward extending lug of the platen release lever has been shortened.

A symbol has been added to the Repeat keytop as shown.

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Supplement of 5/3/68

This supplement is released to inform servicemen of the changes made to improve the Decimal transfer mechanism recently included in late serial number machines. This release will also include a condensed functional description of the transfer operation relating to the movement of the #3 operating slide.

Please insert this supplement (pages P-34 thru P-39) in proper sequence in your copy of C.S.B./#P2-501.

#### #40 Improved Decimal Transfer Mechanism

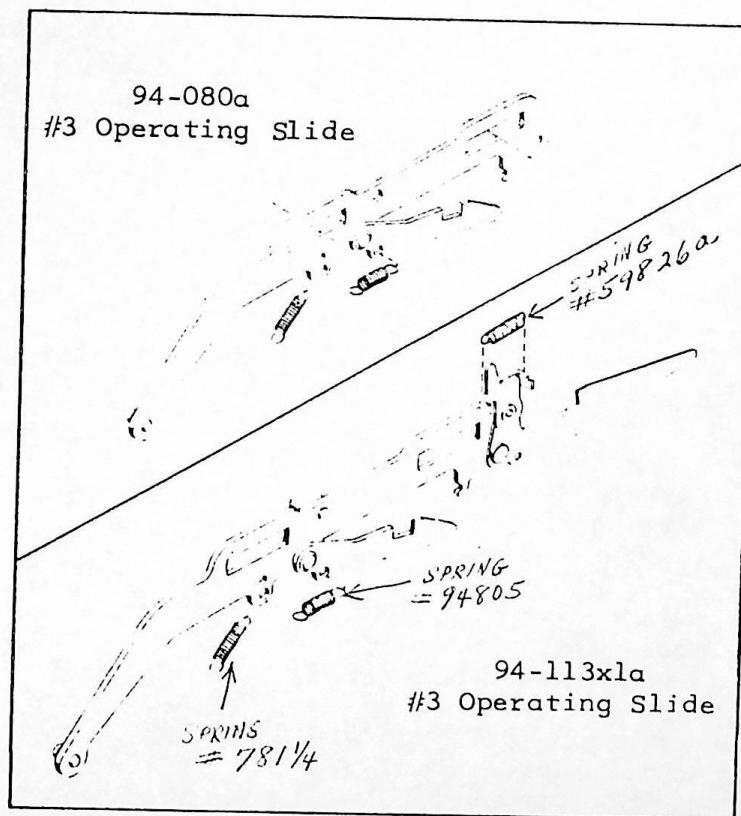
(Ref. C.D./#P-854)

Page H-9

Above Part No. 94-080a, where you have previously added 94-113xla, Slide,  
Add: See Item #40, Page P-34.

A new #3 operating slide, 94-113xla, has been released to meet requirements of 580 models and the new style transfer mechanism.

A latch has been added to the rear of the standard #3 operating slide (94-080a). The new slide, 94-113xla, will be utilized to enter amounts into the memory gears on Total, Sub-Total and Product Total operations and for use with the new style decimal transfer mechanism. The use of the new slide in the Memory mechanism has been released previously...therefore, the function of the slide discussed in this release concerns only the function of the slide during a decimal transfer operation.



## Page K-3

Draw a line through Part No. 915-090 and the associated hardware listed below:

665 Screw	915388a Stud
67 Washer	65805 Spring
65370 Nut	60914 Retainer

Above these parts write: "Previous Style, See Page P-35."

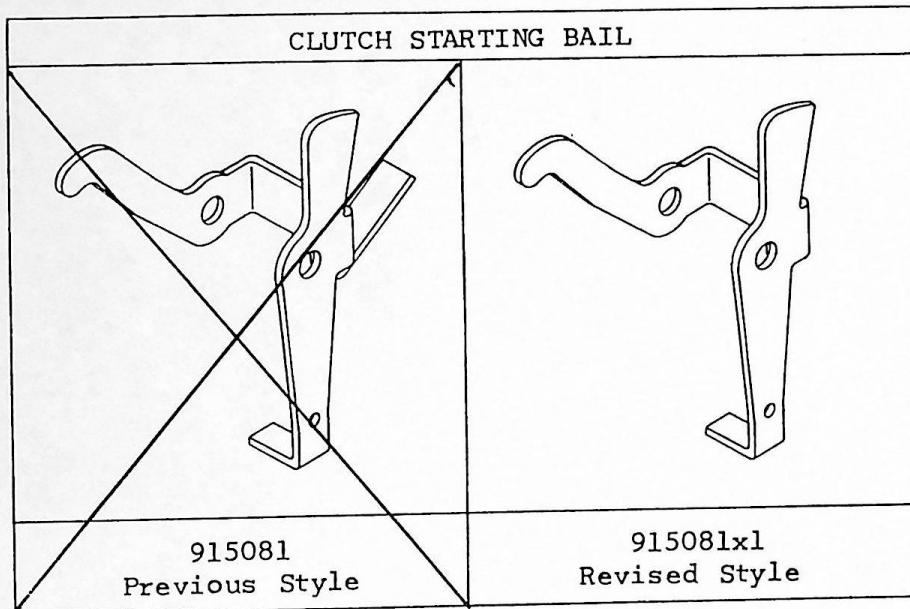
Change Part No. 92-001b To 92-001xl

The extension on the Selector Raising and Lowering shaft on which the 915-090 transfer arm was mounted has been removed.

## Page L-6

Change Part No.  
915081 to  
915081xl.

The upward extending lug has been removed from the clutch starting bail.

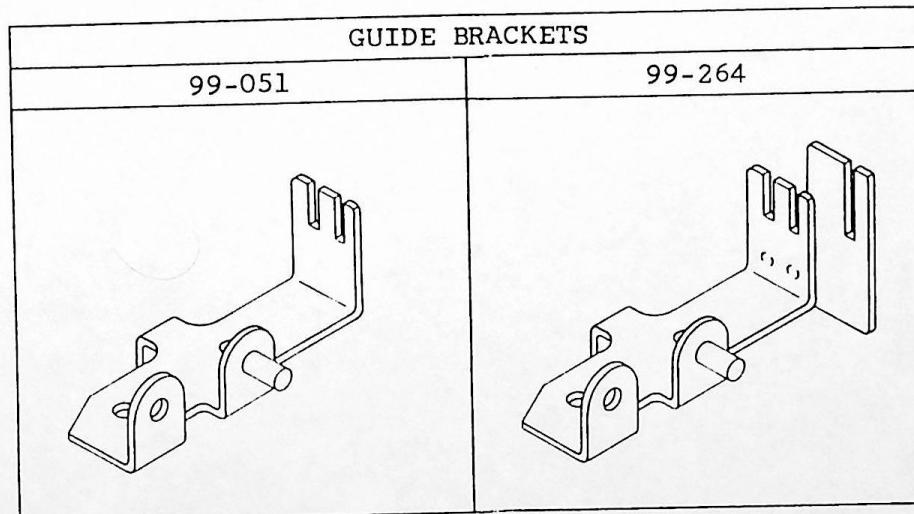


Note: If the mechanism described and illustrated in this release is installed in Field machines, it will be necessary to replace the 99-051 guide bracket (ref. page D-17) with the 99-264 bracket illustrated below.

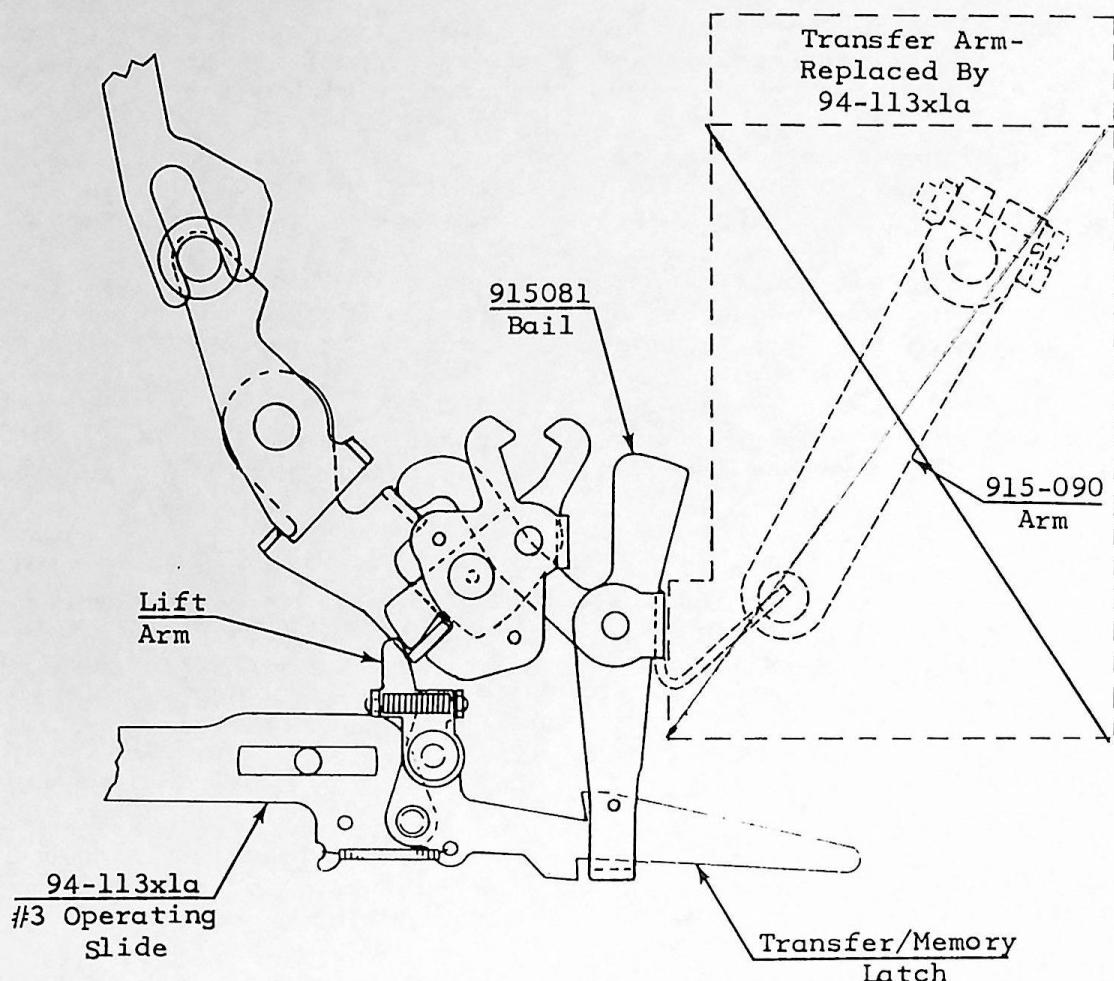
Part 99-264 prepared from Part No. 99-051, has an additional guide slot blank, spot welded to the right of the existing guide slots for the support of the rear latch on the revised #3 operating slide.

Part 99-264 should be ordered only when installing the new transfer mechanism in a field machine.

Should it be necessary to order guide brackets for 580 machines with factory installation of the transfer mechanism, refer to page D-18, Revised 1-30-68.



## Improved Decimal Transfer Mechanism



To remove the critical adjustment between the 915-090 transfer arm and 915081 clutch starting bail an improved transfer mechanism has been initiated.

The transfer arm has been removed and has been replaced by the Transfer/Memory latch on the rear of the #3 operating slide.

This improvement will only affect the return shift of the selector to home position (right) as did the previous style transfer arm and will prevent the Starting Bail from being activated at the wrong time.

### Function

Once the racks have returned to home position...entering the amount into the selector, the #3 operating slide moves from its full forward position to its full rearward position.

The clutch starting bail, which is in its full left position, due to the shift slide being in its left position, locates the lug on the downward extension of the clutch starting bail in the path of the step on the lower edge of the transfer memory latch of the #3 operating slide.

The #3 operating slide moving fully rearward pivots the clutch starting bail, removing the clutch release lever from the scissors, putting spring tension on the clutch selecting cam...disengaging the shift clutch latch.

The #3 operating slide moves forward at the end of the machine cycle allowing the clutch starting bail to pivot back to its neutral position, leaving the clutch release lever in an active position...limiting on the bail latch.

The fishtail, which is now positioned for a right shift, moves the positioning plate for the shifting pawls downward during the 1st 180° of the shift clutch rotation...disengaging the lower pawl and engaging the upper pawl with the inner ratchet gear.

As the selector shifts from the second to the first column, the selector carriage strikes the lug on the shift slide...restoring the shift slide to the right.

Restoring the shift slide to the right, pivots the scissors counterclockwise, (viewed from right)...releasing the shift clutch latch. It also restores the clutch starting bail to the right, moving it to its neutral position...removing the lug on the downward extension of the starting bail from the path of the transfer/memory latch.

### Lift Arm

The transfer memory latch also contains an upward extension containing a lift arm and yield spring which are used during a product total operation to raise the latch out of the path of the lug on the clutch starting bail.

The upward extension contains a shouldered stud which is the pivot point for the lift arm. The stud protrudes from the left side of the upper extension and is positioned slightly beyond the rear edge of the #3 operating slide...when the transfer memory latch is in neutral position.

During multiplication the selector shifts from right to left, stopping at each displaced sensing finger and cycling until the M/Q gear in each column is counted back to a zero position...restoring the sensing fingers to a neutral position. The sensing fingers while displaced, hold the mult. sensing bail up in an active position, holding the shift slide in neutral and keeping the machine in hold up. As soon as the last sensing finger is restored, the mult. sensing bail is allowed to restore...releasing the hold up link and removing the block from the shift slide...allowing the selector to shift right to home position while the machine is completing the product total operation.

Removing the block from the shift slide allows the slide to move to the left, pivoting the scissors, and relocating the clutch release lever from the flat latch to the bail latch. (The clutch release lever was moved out of the scissors at the beginning of multiplication, to maintain spring tension on the clutch selecting cam.)

The shift slide moving to the left, moves the clutch starting bail to the left and locates the lug on the downward extension of the bail in the path of the transfer memory latch on the #3 operating slide. If the selector does not reach home position (which would restore the clutch release lever and scissors to normal) before the #3 operating slide moved fully rearward, then the lift arm on the transfer memory latch would strike the lower edge of the clutch release lever...lifting the transfer memory latch up out of the path of the lug on the clutch starting bail; thereby preventing the latch from re-activating the clutch starting bail and clutch selecting cam.

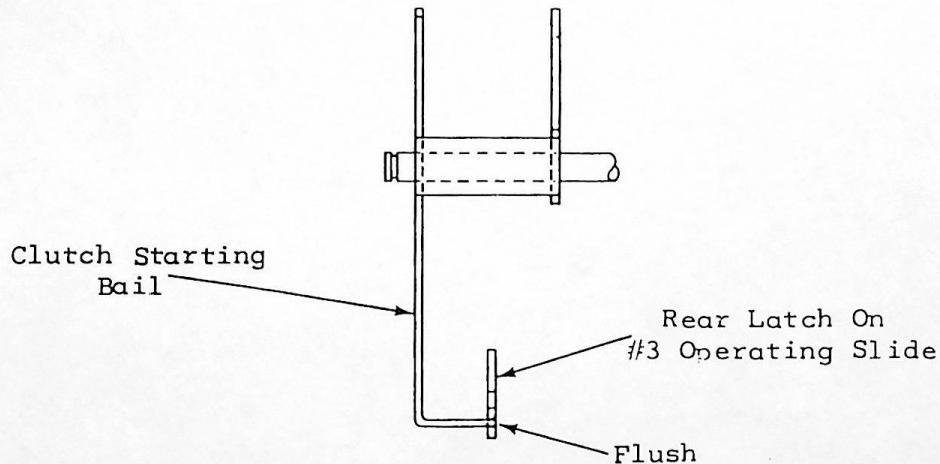
The left end of the pivot stud for the lifting arm, protruding from the left side of the transfer memory latch, limits the upward movement of the latch. Since the #3 operating slide moves further rearward than the latch can lift, the yield spring for the lifting arm flexes.

As the transfer memory latch is being raised, pivoting on a stud on the rear of the #3 operating slide, the upper extension moves forward, moving the left end of the pivot stud for the lifting arm against the rear edge of the #3 operating slide...stopping the latches upward movement.

The reason for limiting the upward movement of the transfer memory latch is to prevent the upper edge of the latch from binding on the lug of the memory gear lifting arm on the model 580 machine.

#### Clutch Starting Bail Adjustment

Manually remove the clutch release bail from the scissors. Cycle the machine by hand crank until the selector shifts one full column to the left. Manually position clutch starting bail in its full left position, form the downward extension of the starting bail to position its lug left or right for just a full hold with the rear latch on the #3 operating slide. The lug on the starting bail should also be positioned vertically in the middle of the active surface on the #3 operating slide. Neutralize machine.



Installation of the new mechanism in field machines, providing one of the conditions listed below are encountered, is recommended.

- a. All machines with a history of selector transfer problems.
- b. Broken clearout gears.
- c. Machines requiring replacement of any of the previous style transfer mechanism parts.
- d. Updating in the area: example-Installation of Accumulator Friction Mechanism

Installation of this improvement in production machines began with serial number B-981962.